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46th Range Management Squadron
Eglin AFB, Florida

Assault Airstrip Environmental Assessment

RCS 09-783

By: 96 CEG/CEVSP, Eglin AFB, FL



Photo taken by: Munnaf H. Joarder

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FINDING OF NO SIGNIFICANT IMPACT

CONSTRUCTION OF ASSAULT AIRSTRIP

EGLIN AIR FORCE BASE RESERVATION, FLORIDA

RCS 09-783

Pursuant to the Council on Environmental Quality's regulations for implementing procedural provisions of the National Environmental Policy Act (40 Code of Federal Regulations [CFR] 1500-1508), 32CFR Part 989, and Department of Defense Directive 6050.1, the U.S. Air Force has conducted an Environmental Assessment to identify potential effects associated with the reopening of an inactive airfield at Rock Hill on the Eglin Range Complex. The Environmental Assessment (EA) is incorporated by reference.

INTRODUCTION

The 46 Test Wing has determined the operations on the Eglin Range Complex have increased sufficiently to make the reopening of unimproved assault airstrips a necessary and desired action. The evaluation of available assets in the Environmental Assessment quickly narrows down areas meeting 46 Test Wing needs to the inactive assault airstrip at Rock Hill.

PURPOSE AND NEED FOR THE PROPOSED ACTION

46 Test Wing manages the air and ground space throughout the Eglin Range Complex. The four dimensional scheduling tasks are complex and dense as new missions are added to the air and ground space. Managing in four dimensions is to consider each mission in terms of altitude(s) required; the breadth of the maneuvers; total length of the required "box" of space; and the timing of the event. The addition of F-35 training, increases in C-130 operations, adding 7 Special Forces training, increases in 6 Ranger Battalion, and the heavy use of small remotely-piloted observation aircraft has made air and ground training management very complex. The 46 Test Wing also hosts ongoing test and evaluations of munitions, aircraft, space systems, and

others. To accommodate this, the existing airfields are being heavily utilized and upgraded under BRAC 2005. These upgraded airfields do not meet the need for primitive forward airbase and bare base simulated operations. These types of missions also require a remote airfield to practice night landing preferably on a dirt strip. Dirt airstrips cannot sustain continuous use by C-130 aircraft without ongoing and costly airstrip grooming (leveling out ruts). The proposed schedule of use of this proposed action falls below the need for continuous maintenance.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The 46 Test Wing proposes to reopen the assault airstrip at Rock Hill, near US 331 on the Eglin Range Complex. The action will require the existing dirt strip to be graded, stabilized and lengthened by 500' to meet current air safety requirements. Trees and brush that have been allowed to grow in the clearance areas will have to be cleared and the areas maintained as low growth. The entrance road will need to be upgraded to support needed equipment and rerouted to comply with air field clearance rules. No permanent buildings or continuous occupation is desired. No utilities are desired to include communications, electrical or water utilities. The site is to remain primitive.

Alternatives examined included the existing LZ East, B-5, C-52, C-53, and Auxiliary Fields 1 and 6. All existing sites are heavily scheduled, do not have sufficient "primitive" conditions, or have other conflicts.

The No Action Alternative is to continue to schedule missions on the existing airfield assets and delay, divert, or refuse additional missions.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

The EA is incorporated by reference and covers the following in detail.

ACOUSTIC: The Rock Hill area is remote. Normal operations are expected to follow the Eglin Range Complex air traffic pattern for approaches and takeoffs. The standard rate of climb out of the strip is sufficient to attenuate normal aircraft (C-130) noise below the threshold of disturbance (45dB) for even the closest resident.

AIR: Regional Air Quality will be unaffected as the new airstrip will be utilized for existing missions. Construction dust will be addressed by wetting and other controls. The long term air quality impact is limited to the added capacity for a limited number of flights at Rock Hill. Dust from prop-wash will increase but is not significant due to intentional limiting of landings at the airstrip.

BIOLOGICAL: The airstrip is a re-working of an existing but abandoned strip. The airfield may have yet undiscovered listed, threatened or endangered species, but none have been noted in the two biological surveys completed for this area. Gopher Tortoise survey and forestry section coordination will be required prior to construction. Additional USFWS consultation was not required per existing agreements with Eglin AFB Natural Resources.

CULTURAL RESOURCES: The proposed undertaking has been coordinated and completed under NHPA Sec 106 resulting in a determination of no historic properties affected. Post-review discoveries of historic properties are considered unlikely to occur but if such inadvertent discoveries occur during implementation of the proposed undertaking, procedures of Eglin AFB's Integrated Cultural Resources Management Plan will be followed. It is noted that there is some interest in cold war artifacts at the field and they will be left in place. The airfield re-design is purposefully to imitate the existing layout further preserving the late 1960s cold war airfield configuration. The majority of the construction will be to add fill material to the runway. As such, no discovery or disturbance of Native Artifacts is expected, however procedures are in place to protect any such inadvertent discovery.

GEOLOGICAL RESOURCES: The area is sand hills typical of the Panhandle/Gulf Coast. Construction on sand will require improving the landing strip base to accommodate assault landings. The airfield surface may be upgraded to clay to stabilize the local sand. There are no known sinkholes in the area. The construction of ponds to control storm water is not anticipated to cause or contribute to negative geologic consequences. No significant impact is anticipated.

HAZARDOUS MATERIALS AND WASTE: Construction activities utilize materials that can generate characteristic hazardous waste. Sealants, lubricants, and fuels may be utilized during the construction phase. All materials and waste will be monitored for proper use and disposal. No

on-site disposal is permitted. Long term construction and maintenance will add no significant hazardous pollutants. Operationally, this is to be a sterile airfield with no on-site services or supplies. No material or waste is to be left on-site at the conclusion of any operation.

SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE: The remote location of the project excludes all direct population impacts. Economic impacts will be positive during the construction phase.

TRAFFIC: The construction phase of the project will present some sporadic challenges to traffic as lanes are restricted by construction activities.

UTILITIES AND INFRASTRUCTURE: Utilities will not be impacted by this project at all, as none exist and none are to be added or removed.

WATER RESOURCES: Wetlands do exist within the area of concern. Survey and design will avoid impacts to the wetland, streams, and drainages. There is no floodplain at this site to contend with. Ground water is not impacted. Storm water will be captured in detention ponds and released slowly as to not create a burden on drainages. The ponds will completely drain in a few days so new wetlands will not be created; therefore the BASH hazard is not increased. No significant water impacts are anticipated.

CUMULATIVE EFFECTS: Day and night time missions over Eglin Range Complex will continue with periodic changes in activity driven by external events. The "added" activity at Rock Hill will fall within the standard activity already observable on the Eglin Range Complex. The moving of assault strip operations to Rock Hill and LZ East will open airspace on other portions of the Eglin Range Complex to scheduled test and RPV operations. Impacts are anticipated to aid in reduction of range schedule conflicts, a small local economic boost, periodic late hour traffic limits on nearby range roads, and perceptible but not significant aircraft noise associated with occasional airstrip use.

FINDING OF NO SIGNIFICANT IMPACT

After reviewing the EA prepared in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, the USAF Environmental Impact Analysis Process, 32 CFR 989 as amended, and receipt of public comments on the document, I have determined that the Proposed Action would not have a significant impact on the quality of the human environment and therefore an Environmental Impact Statement does not need to be prepared. This decision has been made after taking into account all submitted information and considering a full range of practical alternatives that would meet the project requirements.



DAVID H. MAHARREY, JR., Col, USAF
Commander, 96th Civil Engineer Group



Date

**Assault Airstrip
Environmental Assessment
RCS 09-783**

Executive Summary

The 46 Range Management Squadron (46 RANMS) is responsible to provide its customers with support at Eglin Range to include facilities and airspace. The 2005 Defense Base Closure and Realignment Commission (BRAC) decision to add and expand operations at Eglin has placed unimproved airfields at a premium. Multiple test, evaluation, verification, and training missions have increased including the adding of Unmanned Aerial Vehicles (UAV) to the mix and increased special operations joint operations requiring C-130 and unimproved (dirt/clay) assault landing strip support. The high demand for Eglin airspace and airfields has made foreseeable scheduling conflicts that Headquarters United States Air Force (HQ USAF) planners would like to resolve.

46 RANMS supports Department of Defense (DoD) agency Operational Verification of Concept (OVC) – the next step beyond “test” and before full release or in-theater action. A current and foreseeable use requires a scheduled repetitive (weekly) operation utilizing an unimproved airstrip, particularly at night. Several Eglin locations can be utilized, all with minimal facilities. In this Environmental Assessment (EA) the locations are examined and their pros and cons discussed. While the primitive facilities at alternate locations may be adequate, they all have other primary users during the desired hours of operation. Several of the fields are experiencing interference from multiple users making OVC, test and evaluation in a “laboratory” with controlled parameters impossible. After much exploration and rescheduling it is apparent that as a minimum one more airstrip is needed or an existing strip must be reserved for 46 RANMS customer program use.

The requirements of an additional airstrip are daunting in densely used commercial and military airspace. The desired strip needs to be sufficient for airdrop, helicopters, C-130 and possibly C-17 aircraft. Location as well as cost is a factor for maintenance and construction. The use of an existing underutilized or abandoned field is preferred. It is desired to use military airspace to avoid commercial traffic conflicts, noise issues and safety complications. It is desired to be away from UAV operations taking place day and night to avoid mid-air collisions under blackout and dark sky conditions. Likewise, the HF/UHF/Ka band radio interference from UAV and ground troop operations is to be avoided. Therefore the renovation of the abandoned Rock Hill assault airstrip was suggested as it meets these criteria.

The EA is not a predetermined decision document. It examines all reasonable alternatives and presents leadership with options and consequences. The document is to capture the process that eliminated alternatives and why, using the “reasonable” standard or fails to meet purpose and need. Not every alternative requires further analysis once its use is discovered to be unreasonable. This EA discusses and dismisses most airfields and focuses in on three alternatives to meet the stated purpose and need: a) stay with the current work-around use of multiple fields with Auxiliary Field 1 as a primary (no action alternative), b) moving operations to an existing field (i.e. Auxiliary Field 6 or LZ East), displacing other users; or c) re-developing an existing but dormant airfield (i.e. Rock Hill assault airstrip).

The development of the preferred alternative (Rock Hill) is a clear choice when the operational constraints, available land area and other constraints are considered.

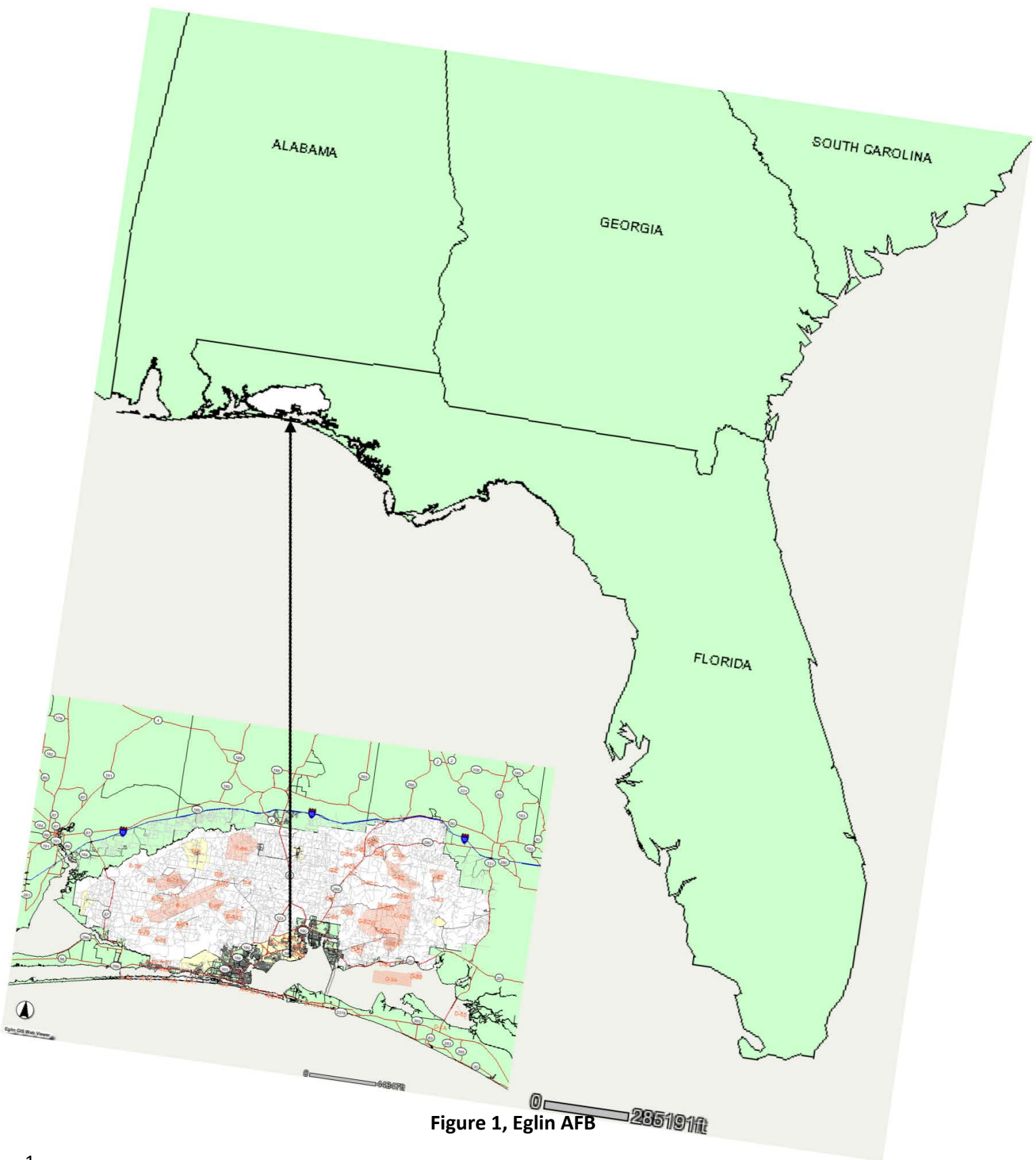


Figure 1, Eglin AFB

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| 46 RANMS | 46th Range Management Squadron |
| 6 RTB | 6th Rangers Training Battalion |
| 7 SFG | 7th Special Forces Group |
| 96 CEG | 96th Civil Engineer Group |
| 96 CEG/CERR | Real Estate |
| 96 CEG/CEV | Environmental Management Division |
| 96 CEG/CEVCE | Environmental Engineering Section |
| 96 CEG/CEVSH | Cultural Resources Branch |
| 96 CEG/CEVSN | Eglin Natural Resources Section |
| 96 CEG/CEVSNW | Wildlife Section |
| 96 CEG/CEVSP | Environmental Analysis Section |
| AF | Air Force |
| AFB | Air Force Base |
| AFI | Air Force Instruction |
| AFSOC | AF Special Operations Command |
| AOC | Area of Concern |
| ASTE | air dispensed flare testing |
| AUX | Auxiliary |
| BASH | Bird/Wildlife Air Strike Hazard |
| BMP | Best Management Practice |
| BRAC | Defense Base Closure and Realignment Commission 2005 |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CZMA | Coastal Zone Management Act |
| DoD | Department of Defense |
| DDESB | Department of Defense Explosives Safety Board |
| DOP | Director of Operations |
| EA | Environmental Assessment |
| EO | Executive Order |
| EOD | Explosive Ordinance Disposal |
| ERP | Environmental Restoration Program |
| ESA | Endangered Species Act |
| FAA | Federal Aviation Administration |
| FAC | Florida Administrative Code |
| FANG | Florida Army National Guard |
| FDEP | Florida Department of Environmental Protection |
| FDOT | Florida Department of |

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|------------|--|
| | Transportation |
| FHWA | Federal Highway Administration |
| FNAI | Florida Natural Areas Inventory |
| FOD | Foreign Object Damage |
| FS | Florida Statutes |
| FY | Fiscal Year |
| GIS | Geographic Information System |
| HAP | Hazardous Air Pollutant |
| HQ | Head Quarters |
| HF/UHF/Ka | Radio channels =high frequency, ultra high frequency and kilo-meter band |
| IFE | In Flight Emergency |
| IWR | Impaired Waters Rule |
| LZ | Landing Zone |
| NAAQS | National Ambient Air Quality Standards |
| NEI | National Emissions Inventory |
| NEPA | National Environmental Policy Act |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| NVG | Night Vision Goggles |
| ONA | Outstanding Natural Area |
| OVC | Operational Verification of Concept |
| RANMS | Range Management Squadron |
| RC3 (RCCC) | Range Configuration Control Committee |
| RDESC | Range Development Executive Steering Committee |
| RCRA | Resource Conservation and Recovery Act |
| RCW | Red-cockaded Woodpecker |
| ROI | Region of Influence |
| RPV | Remotely Piloted Vehicles (also UAV) |
| RR | Range Road (owned and maintained by Eglin AFB) |
| RTB | Ranger Training Battalion |
| SBS | Significant Botanical Site |
| SFG | US ARMY 7th Special Forces Group |

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| SR | State Road (Florida DOT) |
| SWPPP | Stormwater Pollution Prevention Plan |
| TA | Test Area |
| TDY | Temporary Duty |
| T&E | Threatened and Endangered |
| UAV | Unmanned Aerial Vehicles (also called RPV) |
| U.S. or US | United States |
| U.S.C. or USC | United States Code |
| USACE | U.S. Army Corps of Engineers |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| UXO | Unexploded Ordnance |
| Yr | Year |

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Chapter 1 Purpose and Need for Action

HQ USAF has directed the 46 RANMS/DOP to provide a secure unimproved (assault) airstrip on Eglin Reservation with the minimum of mission conflicts. The airfield must be available for scheduled or unscheduled use at the will of HQ USAF. The primary aircraft use is to be cargo type aircraft, primarily C-130 in all variants.

1.1 Proponent

The designated proponent (office) for this project is HQ USAF A3O. The designated representative is Mr. William Kasper, 46 RANMS/DOP.

1.2 Need

46 RANMS operations are currently based at Auxiliary Field 1 (Test Area C-5). Multiple agencies/users are creating an intense situation making highly flexible and short notice scheduling missions difficult. The move to an alternate location is a proactive HQ USAF directive as mission density is projected to increase as other users enter into the available airspace in FY 11 and beyond.

The proposed action baseline **needs** are as follows:

Facility (general):

secure,

readily available

minimally improved transport airstrip for use by HQ USAF (46 RANMS customers) is needed to satisfy national security and test requirements

Location:

must be able to support multiple activities to include air cargo drop

must support Operational Verification of Concept (OVC) of air assault, personnel drop, and other air drop or extraction tests

must support all variants of C-130 landing and takeoff

must provide isolation from electronic interference from other Eglin Range operations in order to achieve test goals and objectives

Site features:

approximately 100-150 yard diameter clear area with no obstructions is required for air drops

utility upgrades are specifically not desired at this field. Water is not to be trenched in even for fire suppression as part of this project. Electricity will be provided on an as needed basis by 46 RANMS mobile equipment that is not to be stored onsite. Hardwired telecommunications are not desired and will be accomplished strictly by radio, cellular, or other wireless communication. The lack of infrastructure is considered a crucial capability, not to be lost as to mimic global assault landing field conditions.

Airfield surface:

short term vehicular parking/storage will be required adjacent to the aircraft parking area

must be an unpaved compacted unimproved (clay/sand) surface without matting or other structural improvements

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must provide sufficiently improved turn around and parking space to accommodate fully loaded transport (C-130 or C-17) aircraft. These areas may require surface improvements or soil stabilization to resist low speed turning and parking loads.

must be capable of handling cargo load/offload/transfer

Lighting:

the ability to test under conditions of darkness (dark sky) is essential

airfield lighting will not be installed including landing, runway, taxiway, security and facility lighting as they alter the primitive airfield conditions required for tests such as for NVD (Night Vision Devices) for dark sky operations

there is no requirement or intention to use or improve this airfield environment in any way that would not mimic minimal combat airfield conditions as found globally in remote areas

Operations and Maintenance:

expense of maintaining a safe and useful capability cannot exceed limited customer resources
cost is a consideration

crash recovery and fire protection are not desired as an on-site service. Declared In-Flight-Emergency (IFE) is to divert to an airfield with appropriate full time support if possible (Eglin/Duke/Hurlburt).

Mission demands for fire/rescue support will be scheduled. Fire/rescue support will be limited to crew rescue and recovery as the level of immediate response will be limited.

fire suppression will be limited by the capacity of the equipment and lack of field water resources.

Brush fires and intentional clearing operations would be handled by Jackson Guard Fire department and with the cooperation of base and civil fire departments.

refueling/defueling is an infrequent and unlikely requirement. Provisions for such an eventuality should be included as part of emergency planning. Fuel bladder, tank and other storage on-site is not required.

Any servicing is to be provided by fuel truck.

the ability to perform very limited emergency maintenance must be considered. Tire changes and other safety related maintenance may be required at any time. Maintenance is to be completed at Duke Field or other fully equipped field if possible.

The proposed action baseline **desires** are as follows:

building to, or future upgrade to, C-17 capacity may be desirable as mission needs and airframe availability may require the larger aircraft.

quick access to low traffic, paved range roads is desired. Movement of oversized loads is less complicated in low traffic. Emergency response time is reduced with access to good. Temporary area isolation (road blocks) will be required on occasion.

the field will require sufficiently improved turn around and parking space to accommodate fully loaded transport (C-130 or C-17) aircraft. These areas may require surface improvements to resist low speed turning and parking loads.

the ability to on/off/transfer loads is desired.

Alternative or additional aircraft intended by the 46 RANMS to utilize the assault airstrip under their control would be conventional rotary aircraft to include helicopters (excluding CV-22 Osprey). The types of improvements or lack thereof would limit the use of the airfield to bare-base compatible operations. A very select number of other jet aircraft may be able to utilize this type of field and may occasionally do so for testing. It is unlikely that fighter aircraft would attempt to utilize an unimproved surface assault landing field due to insufficient runway length and jet engine damage (foreign object damage-FOD) would definitely result from landing on a loose surface. Vertical takeoff aircraft currently in the inventory such as the CV-22 and F-35B are specifically not accommodated by the proposed composition of the runway, parking pads or aircraft overruns/turn a rounds as the down blast will cause jet engine

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FOD and deteriorate (erode) the runway. Unprotected concrete surfaces such as parking pads, cannot sustain the high temperatures produced by CV-22 and F-35B without blistering and breaking.

Some improved surfaces for short term parking/storage will be required adjacent to the aircraft parking area. Vehicles and supplies are not to be left unattended. The use of the field longer than one day will require the filing of an AF Form 813 Request for Environmental Impact Analysis for TDY or other temporary field use.

Assault Strip safety and construction requirements:

Turn-around and LZ will be compacted clay; parking apron will be concrete.

LZ Dimensions (IAW all regulations) at a minimum will be:

- 60' wide with 10' shoulders on each side
- 35' graded area on each side of shoulders
- 60' maintained area on each side of shoulder
- Overall = 270' wide x 4,100' long

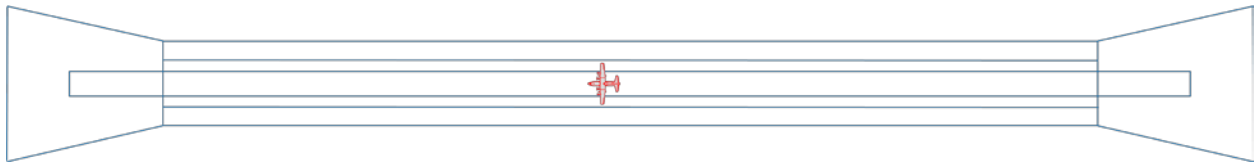


Figure 2, Airstrip layout required for C-130 operations

Additional considerations of negative impact:

Unmanned Aerial Vehicles (UAV) operations are dominating other (specifically Auxiliary Field 1, 6 and LZ East) airfields as all forces embrace this technology. The conflict with UAV flights is of great concern and a major factor in requesting a separate airfield away from UAV operations. The site selected needs to be as free as reasonably achievable of competing UAV traffic, communications, and ground clutter as is possible to maintain a clear OVC area to remove uncontrolled test variables.

Air Force Special Operations Command (AFSOC), 6 Ranger Training Battalion (6 RTB) and 7 Special Forces Group (7 SFG) ground training ranges and off range exercises add elements of uncontrolled test variables. The landing strip needs a high degree of separation from these activities to assure “clean data” for OVC and testing.

The use of the 46 RANMS airstrip by temporary duty (TDY) or emergency services is foreseen as an eventual probability. Such an action will require an AF Form 813 Request for Environmental Impact Analysis to be filed. The placing of water bladders, sanitary services (field kitchens or bathrooms), tents, vehicle parking or other operations will be evaluated based on the scope of the temporary operation. The organization taking temporary custody is to be held responsible to return it to “clean” conditions (pre-deployment or better).

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1.3 Purpose

The specific purpose is to secure an area for an unimproved assault air-strip with OVC test specific uses. To perform necessary improvements to meet minimum airfield, safety and other requirements, projected mission requirements, and provide a realistic primitive landing strip and test area for 46 RANMS customers. Restricting use to only 46 RANMS activities is essential for maintenance of an unimproved strip in good working order at minimal cost to the organization. 46 RANMS wishes to essentially be the “owner/operator” of the airstrip to assure customer costs are put in to a customer used facility.

The proposed action has been briefed to the Eglin Range Configuration Control Committee (RC3) and approved by the 46th Test Wing Commander as chair of the Range Development Executive Steering Committee (RDESC) on 30 November 2009.

1.4 Laws, Regulations and Other EA/EIS

Airfield design and flight safety rules define much of the process that must be undertaken to operate any airfield. The primary publications are as follows. Ancillary publications will be in the appendix.

UFC 3-260-01, 17 Nov 2008, Airfield and Helicopter Planning and Design, Chapter 7

UFC 3-260-02, 30 June 2001, *Pavement Design for Airfields*, Chapters 3, 5 and 6

ETL 97-9, Criteria and Guidance for C-17 Contingency and Training Operations on Semi-Prepared Airfields

ETL-09-6 (Change 1) 17 Aug 2009, C-130 and C-17 Landing Zone (LZ) Dimensional, Marking, and Lighting Criteria; specifically, on construction of airfield (assault unimproved landing zone).

Planning and Design of Roads, Airfields, and Heliports in Theater of Operations – Airfield and Heliport Design

AFH 32-7084, AICUZ Program Manager’s Handbook, Paragraph 2.4.2

AFI 32-7086 Hazardous Materials Management

AAC Sup1 Plan 32-7086, Hazardous Materials Management & EAFB Supplement

AFI 32-1021 Planning and Programming Military Construction (MILCON) Projects, 24 Jan 2003

AIR FORCE MANUAL 32-1123(I), 1 May 1999, Chapter 6 and 7

Air Force Handbook 32-1084 1 Sep 1996, Facility Requirements, Chapter 2

ARMY TECHNICAL MANUAL, TM 5-803-7; NAVAL FACILITIES ENGINEERING COMMAND PUBLICATION P-971; Civil Engineering; AIRFIELD AND HELIPORT PLANNING AND DESIGN

AIR FORCE INSTRUCTION 13-217, 10 MAY 2007; Space, Missile, Command, and Control; DROP ZONE AND LANDING ZONE OPERATIONS, Chapter 3

Eglin Overland Air Operations PEA RCS 97-070

Integrated Natural Resources Management Plan RCS 00-826

Eglin BRAC EIS Joint Strike Fighter and 7th SFG RCS 06-347

Landing Zones Final Environmental Baseline Document, August 2008

1.5 Summary of Decision to be Made

The decision to evaluate and potentially reactivate an assault airstrip is directly as a result of new mission “waterfall” from the 2005 BRAC. The BRAC decision is discussed in the 2005 BRAC EIS (7 Special

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Forces), the 2009 BRAC Supplement (F-35), and the 2010 Military Housing Privatization EIS. Other associated EAs are listed in the appendix.

The decision is therefore to evaluate available locations on the Eglin Reservation for a suitable assault airstrip and to assure such a location meets operational and legal (environmental) requirements of the customer (proponent) as outlined above in section 1.2.

The current situation (no action alternative) is a “work around” situation that could continue indefinitely. If the current situation is to be maintained, some other incoming mission must be curtailed. As all incoming missions are BRAC directed, congressional authority will be required to deviate.

1.6 Scoping

RELEVANT ISSUES

Scheduling conflicts, noise, intentional or unintentional public disclosure, interference with ongoing OCV, testing, evaluation, and training of 46 RANMS customers; all aspects of access and flexibility are being challenged by the heavy mission load at Eglin brought on by BRAC driven changes.

Environmentally: the operation of a unimproved airstrip over a paved one increases dust, erosion potential, and the possibility of spills entering waterways/water table. The required clearing of trees and brush for aircraft safety and clearance will alter a portion of the forested area to an artificial meadow. Aggressive management and planning will be required to ensure impacts are minimal. Maintenance of the clear area will require vegetative management (mowing and spraying) and cooperation with Jackson Guard for periodic burning, animal control and timber harvest.

CONSIDERED BUT ELIMINATED

The process of seeking a solution to the scheduling problems of 46 RANMS opened many possibilities. The current situation is workable if the nothing changes. That possibility is beyond achieving as F-35 and other BRAC changes are upon Eglin. There are over 100 landing zones (LZs) of various purposes, conditions and utilization but most are small clearings for helicopters, troops, or cargo drops; not fixed wing cargo aircraft landing. The list quickly comes down to the original 10 paved Eglin airfields, 2 clay assault strips, 4 unimproved target airstrips and one abandoned assault strip.

The paved airfields are all being put to heavy use with current and new missions. Several fields have recently been repaved or are about to be repaved and upgraded for new missions and training. The F-35 is going to keep three fields busy by itself as each of the 3 versions will have a primary and alternate mission. Pavement is a luxury in many corners of the globe so the 46 RANMS needs to provide a “real” combat environment. That leaves the two unimproved airstrips already under heavy alternative uses (Field 6 assault strip [closed to aircraft] and LZ East). Both are already heavily scheduled with ground support training, UAV and Army C-130 air support missions. The redevelopment of Rock Hill becomes an obvious consideration.

Therefore the options considered, but eliminated include:
the complete reliance on an existing paved auxiliary airfield (1 and 6 are specifically addressed)

Chapter 1

or the use of a primary airfield (Eglin/Hurlburt/Duke/Choctaw) as these do not meet the need as outlined in 1.2.

Also eliminated are all non-fixed wing cargo aircraft capable LZs as they are isolated clearings in areas used or to be used for ground training.

Chapter 2

2.0 Alternatives Including the Proposed Action

2.1 Chapter Overview

This chapter is to describe the alternatives, compare them, and identify the proponent's desired (preferred) alternative.

The National Environmental Policy Act (NEPA) requires the examination of practical alternatives to document the proponent has full knowledge when committing to a final decision. The potential for environmental impact and achievement of objectives is discussed for each alternative. Alternatives may be dismissed with no further study for cause. Reasonable alternatives are to be evaluated for impacts. Reasonable for NEPA purposes is reflective of practical considerations of engineering capacity, minimal environmental impacts, excessive cost incurred by the alternative, displacing current residents or users only to have them create a considerable displaced impact. Other measures of what is reasonable can be included as the proponent or project defines them.

Landing Zones Final Environmental Baseline Document, August 2008, has a more complete listing and data on all 110 LZ, drop zone and helicopter pads on Eglin Range. The following excerpts and brief summaries explain how fields were evaluated for availability and suitability. It should be noted that of the 110 sites only 2 are identified as "clay assault landing strips" – Rock Hill LZ and LZ East. Other strips are briefly discussed to illustrate the complexity of air and ground operations at Eglin and how the alternatives were developed.

The alternatives developed reflect the possible configurations that meet some portion of the desired outcome. Of the developed alternatives, it should be noted that they are what is left after eliminating all the other listed sites in the *Landing Zones Final Environmental Baseline Document* and some others as well. Chapter 2 identifies the sites most likely to meet the intended need and quickly dispatches those that cannot.

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2.2 Alternatives

2.2.1 Alternative A: No Action

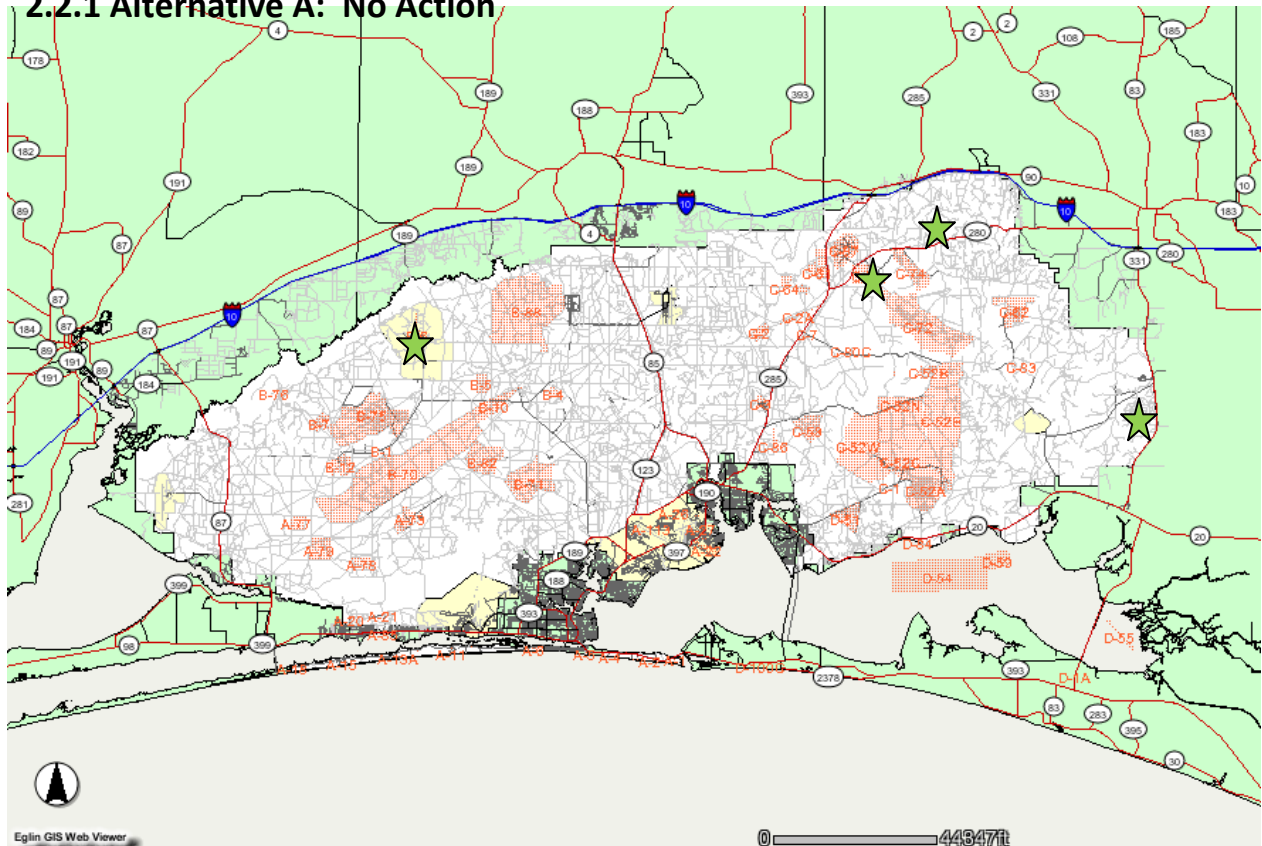


Figure 3, Locations of Airstrips Studied ★

No action in this case is to maintain the current state of 46 RANMS C-130, ground and other aircraft operations. The current typical operation is a weekly landing/take off on Auxiliary Field 1. The activity may require several passes or other range activity in military airspace depending on the nature of the customer's requirements and airspace/airfield availability. Secondary use fields are Auxiliary (Aux) Field 6 and LZ East. Aux Field 6 is a 46 Test Wing Test Area (TA B-6) and not part of 6 Ranger Training Battalion (RTB) cantonment area. 6 RTB activities on Aux Field 6 are scheduled through 46 Test Wing and are subject to field availability.

46 RANMS customer/mission demands may include a second aircraft or ground transportation or ground vehicle support. The airfield location may play a minor role in the actual mission and therefore becomes a secondary consideration. In those cases any Eglin paved or unpaved field is suitable. In most instances an assault airfield is desired for OVC missions and air drops so the assault airstrip LZ East is utilized. Aux Field 6 can be utilized for air drop, but has no active unpaved airstrip.

The "no action alternative" does not require in-depth environmental evaluation. It is an authorized and ongoing operation well established at Eglin. The level of airfield use by 46 RANMS programs are within FAA minimal noise limits and of itself is not a significant airspace use. More detail is available on each proposed or utilized field in the following sections.

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2.2.2 Alternative B: Auxiliary Field 1

Auxiliary Field 1 is an old WWII paved 5000' figure 4 airfield. The east/west landing and taxiway are in poor condition as they have not been repaved or recently maintained. The main landing strip is suitable for minimal C-130 operations. No services (control tower/fire/rescue/maintenance/fuel) are available at Auxiliary Field 1. Fuel has been trucked to the field on an as needed basis; the same is true for other services.

The use of Auxiliary Field 1 as a primary airfield is to continue current operations essentially identical to the no action alternative. The proposal would therefore be for limited exclusive use of Auxiliary Field 1 and other air strips as needed (LZ East and Field 6). The adoption of a specified airfield (Auxiliary Field 1) at a specified or scheduled interval would allow for 46 RANMS scheduled missions but would not meet critical customer demands for continuous availability. The full and exclusive use of Auxiliary Field 1 by 46 RANMS would place the many current range users in the position to demand new facilities. Limited use therefore is a compromise position, acceptable only if 46 RANMS can dominate the operation of the field as needed.



Figure 4, Auxiliary Field 1 (Test Area C-5)

The use of Aux Field 1 seldom requires road closures and meets security needs. Aux Field 1 is suitable for many of the operations currently performed by 46 RANMS customers, but does not meet the needs for unimproved field operations. The use of other airfields and unimproved strips is currently scheduled to meet customer demands.

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Future operations density at Aux Field 1 is increasing with the incoming BRAC driven mission changes at Eglin. Scheduling is becoming tighter as Aux Field 1 is highly desirable for AFSOC, Army, Navy and Army guard UAV operations, training, and testing. AFSOC has unofficially adopted Aux Field 1 as a training area for assault landings, airfield assault, UAV, CV-22 and C-130 operations as this was one of the few available improved surface airfields at Eglin. 46thTest Wing schedules and controls operations at this site, so currently no other organization can claim to exclusively hold the field. The Navy Explosives Ordinance Disposal (EOD), AFSOC, 6 RTB and 7SFS ground activities can and do encroach or overlap other operations causing safety delays when the operations are not compatible. Projected F-35 training missions will impact Eglin main, Hurlburt, Choctaw and Duke Field occupying much of the available airspace especially over Aux Field 1. ASTE (air dispensed flare testing) missions will be ongoing at adjoining TA C-72 interrupting Aux Field 1 operations for all users. Such constraints and scheduling conflicts will impinge on mission requirements forcing tight scheduling and delays for all.

Aux Field 1 is degrading under increased use driving up maintenance frequency and further reducing availability. Scheduling is imperative for Eglin operations and testing to assure safe and successful use of the assigned resources. The additional activity will increase the impact to Aux Field 1 and the other alternative strips.

Evaluating impacts to continuing the use of Aux Field 1 is not required as it is an ongoing mission covered under BRAC EIS and other documents.

2.2.3 Alternative C: Auxiliary Field 6 LZ

Aux Field 6 is currently an alternative field for 46 RANMS operations utilizing the existing asphalt runways, drop zone and blocked assault landing strip. This alternative would be part of the No Action Alternative or it could become the primary field of choice by compromising the needs of the proponent for an unimproved assault landing zone. The selection of Aux Field 6 as a primary field is unreasonable for reasons listed below as it would significantly disrupt and force the relocation of ongoing war-essential operations.

An existing 4,000' unimproved parallel assault strip is unusable as 6 RTB has constructed buildings on it for troop ground field training. This is essential training for the 6 RTB and is not easily relocated.

Aux Field 6 is adjacent to the 6 Ranger Training Battalion (6 RTB) cantonment area. The three paved runways are in various states of disrepair with one 8,500 ft runway (18/36) having been partially repaved and upgraded for C-130 and UAV operations. Transportation is adequate to the field with paved roads the whole way. There are airfield support services, a tower, fire and rescue on-site. The site is shared with AFSOC, 6 RTB and 7SFG operations, ground actions, test programs, UAV training and other range scheduled activities. The 46thTest Wing schedules and controls both air and ground operations at this site.

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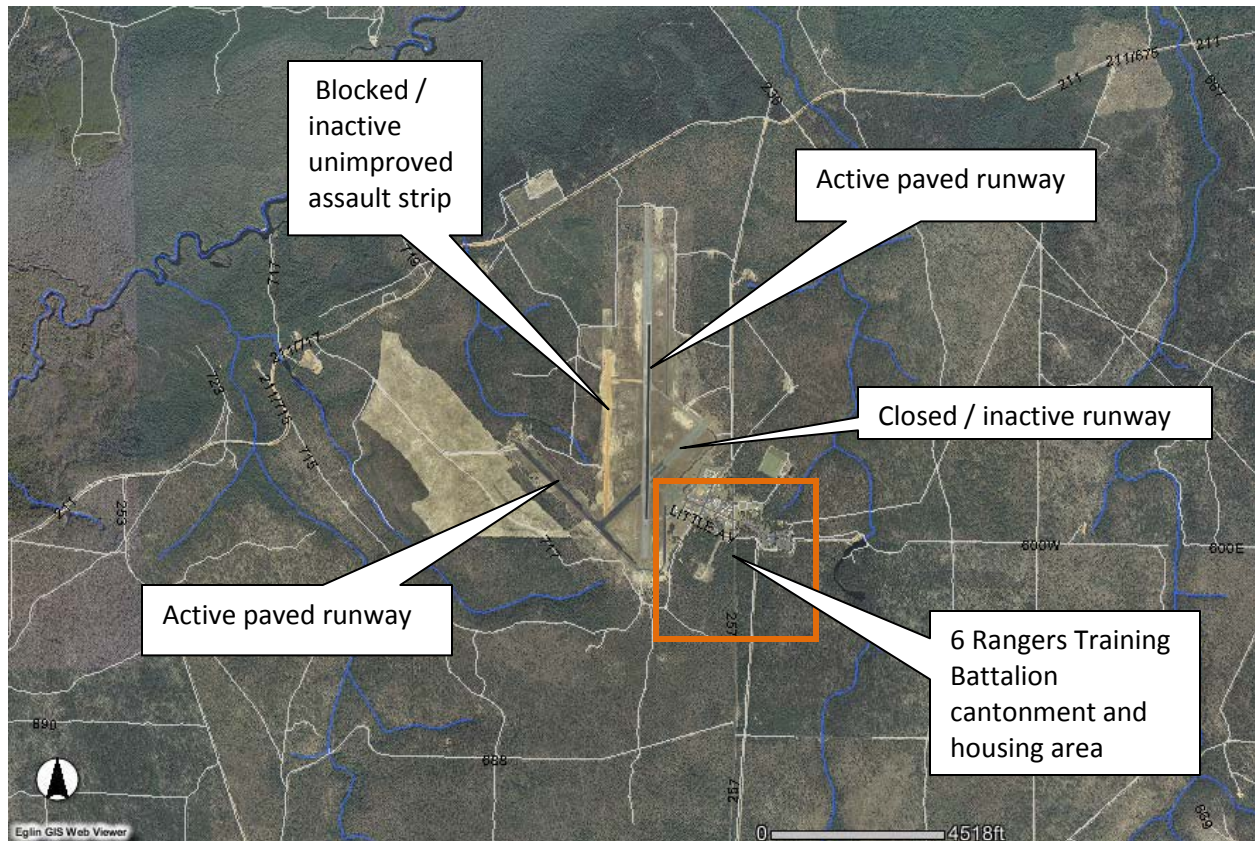


Figure 5, Aux Field 6; 6 RTB

The site appears isolated but does not offer the isolation necessary to get good results for all aspects of OVC or primitive field testing. 6 RTB security lighting and vehicle traffic, while light, do prove problematic. The site can be secured through coordination with the host unit and with some undesired disruption of 6 RTB training activities. Field availability and results may be further disrupted by civilian activities in nearby Holt, the airstrip at Holt and family activity at Rudder City (as the housing is called by 6 RTB). Civilians at Holt have reported being able to observe activities at Aux Field 6 with little difficulty as Holt lies north across the river valley.

Aux Field 6 does offer ample space for airdrop, personnel drop and other equipment testing. 46 Test Wing scheduling and security remain a point of contention with host unit operations, Navy, Explosive Ordnance Disposal (EOD), 7th Special Forces, Special Operations Group and others.

The site also houses families at "Rudder City" the military housing units for "key and essential" 6 RTB leadership. The presence of unknown visitors to families is an operational and security risk to 46 RANMS operations. 46 RANMS customers invest heavily in proprietary technology and are very sensitive to early public disclosure. The security concerns at Aux Field 6 override the environmental and cost concerns of its use. The addition of extensive screening, closure of the Holt civilian airfield and removal of family housing at the field would be necessary to achieve the desired security.

The use of Aux Field 6 creates the least direct environmental impact as it would require no significant new construction or change in primary use. The use of this field would qualify under Categorical Exclusion A2.3.31: Relocating a small number of aircraft to an installation with similar aircraft that does

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not result in a significant increase of total flying hours or the total number of operations, a change in flight tracks, or an increase in permanent personnel or logistics support requirements at the receiving installation. The use of Aux Field 6 on an exclusive basis by 46 RANMS would dislocate 6 RTB and other operations. The re-locating of the 6 RTBs and the other missions would generate a significant impact unless an alternate or abandoned facility could be made ready for their use (none are available on Eglin).

Therefore: Aux Field 6 is not a reasonable candidate for fulltime 46 RANMS use and requires no further analysis to maintain current activity (no action alternative).

2.2.4 Alternative D: LZ East

This is an east/ west unimproved strip located in a remote area parallel with Range Road 213 (Bob Sikes Highway). The strip with overruns is 4,400'. The field is wedged into the only level area available and runs scant 100' feet from RR 213 which merges with a public county road. There is no separate clear drop zone of sufficient size; however the airstrip itself can be used. The airstrip was recently re-graded, extended, the clear zones cleaned out, and gates/fencing was installed. No buildings or other improvements are in the vicinity of the strip.

The site is well drained with streams on both sides of the strip as is Rock Hill LZ. Erosion control and prevention of damage to waterways will be a concern at this site.

LZ East is already a secondary use strip for 46 RANMS customers when available. LZ East is designated as AFSOC's primary assault landing strip requiring significant mission time. LZ East does have a major UAV mission conflict overlapping the time needed. The bumping of this mission is extremely undesirable as the location is ideal for the mission on-site. The mission is not expected to slow or stop any time in the foreseeable future. Therefore it is not reasonable to assume this field is available for the additional use required in a sustainable way.

An estimated 1,500 vehicles pass the site daily significantly reducing security and adding light pollution and other operations and test problems. The road can be closed for operations but closures for any significant amount of time are a problem as there is no detour route near the airstrip. A road closure would involve closing it to traffic at the intersection with SR 285 and at RR 210 as well as detouring traffic at other small side roads. This multiplies the manning needed for ground support to control traffic.

The building of a turnaround area is constrained by a stream bed on the east end and a highway on the west end. A new parking ramp and work area utilizing the taxiway placing the aircraft tail at the edge of the public road were just completed. The north side has limited suitable area for a ramp; again the proximity of streams is a concern.

LZ East will remain an alternate strip for 46 RANMS use. It is not a reasonable alternative as bumping the current user would only create the need to develop Rock Hill LZ or one of the existing unimproved target range strips for the displaced mission.

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Figure 6, LZ East

2.2.5 Alternative E: Proposed Action: Rock Hill Assault Airstrip

The preferred alternative is to rebuild the pre-existing 3,500 foot (ft) cleared strip utilizing the existing clay base as much as feasible, extending the runway to 3,600 ft with 300 ft overruns/turning pads. Site improvements are to be limited to maintain the primitive airstrip conditions found throughout the world. Necessary improvements at Rock Hill are to remove the overgrowth of trees and vegetation as needed to rebuild the airstrip and the minimum clear zone for C-130 transports. A turning pad on or near the North end is desired to allow full engine power (not towed) 180 degree turns. The maneuver will cause ground disruption so some surface improvement or post mission redressing will be necessary. South end turning may also become necessary requiring a turnaround on both ends. The proponent desires to minimize building and maintenance cost as well as environmental impacts; therefore the disturbance of or use of the original taxiway is not desired. The original taxiway may be utilized as a portion of a security fence line road with little or no alteration of the existing surface.

The runway surface is to be constructed of compacted clay with no other structural supplements or matting beyond necessary subsurface drainage, gravel and compaction. The desired clay field construction will severely limit the ability to perform sustained heavy aircraft operations on this field, again mimicking third world airstrips. Cross-runway drainage improvements (culvert or French drain) may be required to minimize runway erosion and will be included if required. Detention ponds may be

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required by state regulation. Any such drainage retention would be located to the east of the runway as to not disturb the existing taxiway or other cultural artifacts.

As the airfield has historic roots in the Vietnam and Cold War Era, there will be some concessions to maintaining the historic footprint of the taxiway and airstrip. Where possible the historic footprint (taxiway) will be maintained.

2.3 Past actions

Rock Hill abandoned airfield is a remote east side of Eglin Reservation unpaved airfield. It is a site in that it was not known to have been used for strafing, bombing, or other activity that would generate Unexploded Ordinance (UXO) concerns but it is noted the area is identified as probable for UXO contamination. The dimensions of the previous field closely match the requirements for C-130 aircraft with sufficient level area to extend the field for C-17 use (an additional 500 feet). Aircraft to have previously used this strip are believed to include C-47 (DC-3) and C-123 during the active period of 1950-1975. The site is bounded by 2 streams running roughly parallel to the proposed runway. The site was used as a Florida Army National Guard (FANG) bivouac site as recently as 2007. State Road 331 is just over a mile to the east of this site and roughly parallel to the airstrip. The location of a state road is not a problem for most test missions and would not normally require a road closure. If a road closure would be required the event would be coordinated through Range Operations. Road closures are required for safety or mission integrity.

The area is within the existing controlled military airspace with similar operations. The preferred site is not intended for heavy use or continuous occupation. Requirements currently reflect less than weekly landing/take off operations and project oriented airdrops or other activities.

ROCK HILL INSPECTION:

Based strictly on what was discovered 8 Feb 2010 in an on-site visit, several things can be determined:

Ground training with light 5.65mm M-16 type blank firing weapons has occurred by the scattered blanks discovered on-site. Several users may have left these. AFSOC, FANG, security forces, and others all may have very recently used the area for training.

The site was active enough to warrant a phone line. The technology is dated and the lines are inoperable. The phone is near the airstrip.

There is a 100% chance field phones were used on-site as segments of field phone wire are easily found. Vehicles (rocket, tank, trucks and jeeps) were abandoned on-site with range control markings on them. The lack of aircraft inflicted holes indicates they were used for locating tests, such as radar, visual, and heat detection. During the Vietnam conflict there was a great interest in locating supply columns

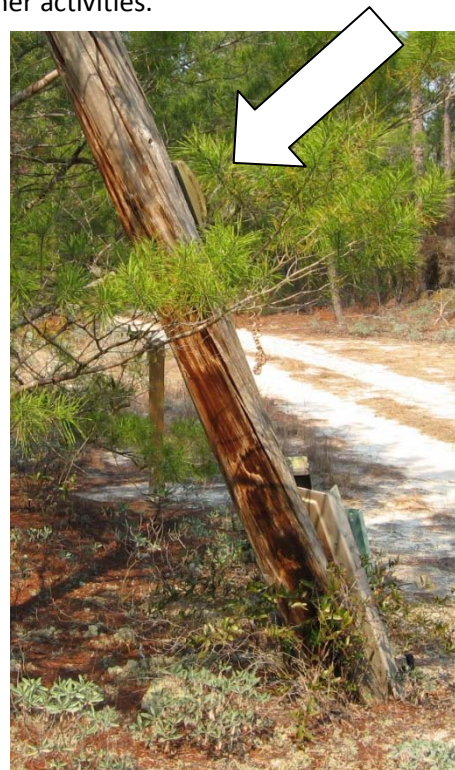


Figure 7, Telephone on pole

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along the Ho Chi Min trail, though there is no documentation to support this conjecture. The runway width cannot be determined precisely, however the clay surface appears quite narrow – less than 75' wide and perhaps less than 50'.



Figure 8, Targets abandoned near Rock Hill LZ. Note tree growing through truck bed.

There are erosion control berms parallel with the runway along the taxiway. There is an area of heavy erosion about mid way on the runway. It is difficult to determine how long the runway has been allowed to deteriorate.

Two B-5 aircraft maintenance stands are abandoned at the south end of the runway. They may have been used as spotting towers or as landing beacons (with lights on them). Their location in soft sand suggests they were not used for maintenance. These are a type of aircraft maintenance stand in current use on cargo and bomber aircraft at other locations. The poor condition of the stands suggests they have not been used in 20+ years.

A "tank" and 1940 Dodge Army supply vehicle were carefully placed as radar targets on the south side of the runway to act as navigational markers.

The area appears to have been abandoned shortly after the Vietnam period (1975) and used periodically for activities other than aircraft since then.

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Figure 9, Tank at south end



Figure 10, Lockheed T-33 Shooting Star, abandoned west of airfield

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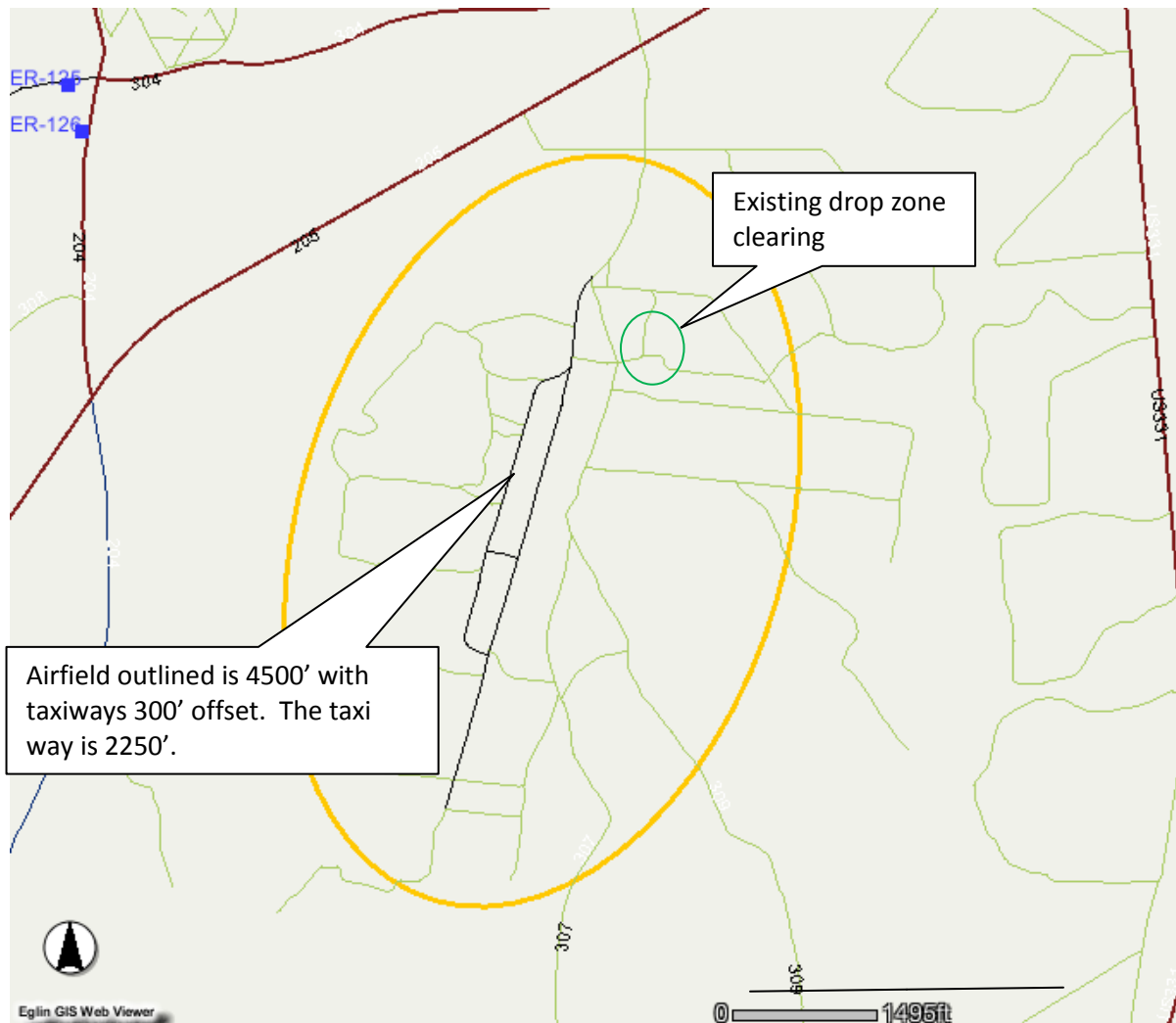


Figure 11, Map: Rock Hill LZ assault airstrip

2.4 Reasonably Foreseeable Actions

The types of OVC testing and operations will require the clearing of a 100-150 yard diameter tree and bush free drop zone. Such a clearing is visible on older maps on the north end of the existing field. This area would be the preferred site for a new drop zone with the same foot-print. The ends of the runway (overruns) may also be utilized as drop zones.

Parking and aircraft turnaround pads of an improved surface material will be necessary to eliminate the need to redress and compact the area after each use as transport (C-130) aircraft tear up clay fields when performing a tight ground turn. As approach/landing will be primarily from the south (like Eglin Main) the north end of the runway will require an improved surface for a turn pad and the south end would be a secondary concern. An improved surface parking pad is projected to be placed along the side of the runway functioning as the taxiway/mission and test load site/maintenance/refuel area. The exact location is to be determined, however the size is known. The improved surfaces may be compacted gravel, shell, airfield matting, concrete, asphalt, or a chemical binder applied to the surface. The material chosen must meet published airfield standards.

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Many normal airfield functions will not be put in place. There is no need for any permanent structures beyond multi use improved surface pads/parking. No tower or control structure is wanted or planned. Final approach is to be a handoff from Eglin Air Traffic Control (ATC) to a combat controller operating from a portable radio or vehicle near the airfield; again to mimic primitive or combat conditions. Fire and rescue will not be on the parking ramp as it will be too close to the active runway, so there must be an off field site for fire/rescue to wait. Maintenance, fueling and any incident that can be taken care of at an existing off site facility will be (Eglin/Hurlburt/Duke/Choctaw). Refueling/defueling will only be done on rare or emergency basis. Tire changes on-site are the expected extent of on-site maintenance. No maintenance equipment to include fire bottles is to be left on-site. Maintenance will be on the parking pad or at the end of the runway (blown tire).

Cargo operations requiring a K-loader are not expected but possible. Forklift operations for containerized and palletized on/off load operations is expected and will be limited to the parking pad. All forklifts, light carts, Air Ground Equipment (AGE) will be trucked in and out for the specific operation. The primary concern beyond the airfield itself will be improving and maintaining an entrance road sufficient to meet mission needs. The current path of travel meanders over soft sand unsuitable for forklifts.

A gate and minimal 3-strand fencing is desired with appropriate signage. The ability to control and secure the airfield and adjacent roads is essential to mission safety and security. Range Road (RR) 205 entrance to RR 307/309 will require a gate of sufficient size to allow for passage of wide loads (K-loader) and provide sufficient restraint to prevent inadvertent entrance to the field. The current entrance road is inadequate for heavy vehicles and will require grading, surfacing (gravel or asphalt) and straightening. A security fence path will need to be established around the perimeter approximately 10' to 15' wide. The parameter road is not to be a bladed clean fire break, but rather a passable ATV or 4 wheel drive vehicle passage. A parking area is essential near the gate for fire/rescue vehicles when requested to support operations, the drop zone has been suggested as sufficient for this purpose. RR 307/309 currently crosses the airstrip in an unacceptable manner. RR 307/309 may need to be re-routed to separate hunters and hikers from any potential conflicts. It should be noted the roads have "drifted" to the current location from a position to the east after the last logging operation. The area is popular with recreational hunters and there will be no reason to deny access to the general area when there is no mission conflict. The actual airstrip may be closed to all vehicle traffic and fenced off. Any hunting, depredation or recovery of game off the airstrip would be controlled by Eglin Natural Resources at Jackson Guard.

RR 205 may require closure for specific missions. US 331 is not anticipated to be closed for any foreseeable mission, however closure for public/mission safety or security is possible. As missions are planned for a south approach/takeoff, the event of a north approach/takeoff would be the most reasonable cause for road closures. Closures of public access roads is to be of minimal duration (15 minutes) and infrequent. Closures are anticipated to occur late at night during field operations, therefore impacting very few travelers. Daylight operations will require closing roads only long enough to assure public safety. As daylight operations are anticipated to not meet most mission requirements, they are anticipated to be rare.

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2.5 Alternative Generation and Eliminated Alternatives: Test Area B-5 (typical target airstrip)

2.5.1 Method of List Generation

The list of alternatives examined is considerably shorter than the apparent list of available fields. A list of 110 Eglin LZs falsely gives the impression of many choices. The LZs are mostly open areas suitable for helicopters and drop zones. There are ten hard surface airfields on Eglin of the original WWII fields. All have missions, and all compete for resources of ground and air space. Not all of the original fields have flying missions and only Eglin, Choctaw, and Duke have been maintained in ready condition. BRAC will increase the use of the lesser used Auxiliary Field 1 and 6 to the point of saturation. In assault airstrips there is only LZ East, the closed LZ on Auxiliary Field 6 and closed LZ on Rock Hill. Several other 2,500' airstrips have been used for targets for years and would be problematic to redevelop as they would require an additional 1,000' of level runway and 600' of overrun (300' at each end) and munitions clearing.

2.5.2 Eliminated Alternatives

B-5, C-52, C-53, C-62, and others: The precise origins of the existing unimproved airstrips are unknown. They have been used for targeting and testing since at least the Vietnam period for early gunship testing. All of these areas are utilized and scheduled by the 46th Test Wing as multi-use areas.

Test Area B-5

The area is ideal for expansion of the airstrip topographically as it is on a 175 ft contour line extending over 7,000 feet. The clay assault airstrip is 2,160 ft in length with a taxiway, but records provided by 46ANMS show it is for visual reference and it is believed to have never been improved for actual use. The short length, as built, would limit the types of aircraft that could have ever used such a field. UXO contamination is probable as live rounds were (are) fired on the strip for testing and training. Ten targets are maintained 1500' north of the "runway" and are used for a variety of tests and training. Air Forces Special Operations Command has used B-5 as a sniper range since as early as 1995. The area is blocked in by the very active range B-70.

The area is habitat for the Red-Cockaded Woodpecker, Gopher Tortoise, and Flat-wood Salamander. The area is classified as excellent habitat for the host species. The strip is significantly overgrown like Rock Hill LZ and C-53.

The largest and most active bombing range B-70 is less than ½ mile to the south of the airstrip. The proximity of this mission critical bombing range safety zone makes TEST AREA B-5 unavailable for development without considerable 46 Test Wing mission changes.

Transportation is very limited in this area with RR 213 being the nearest good road. Road closures for missions would have a strong negative impact on 6 RTB Battalion access. The unavailability of the strip due to adjacent activities and safety issues clearly make this an unreasonable choice.

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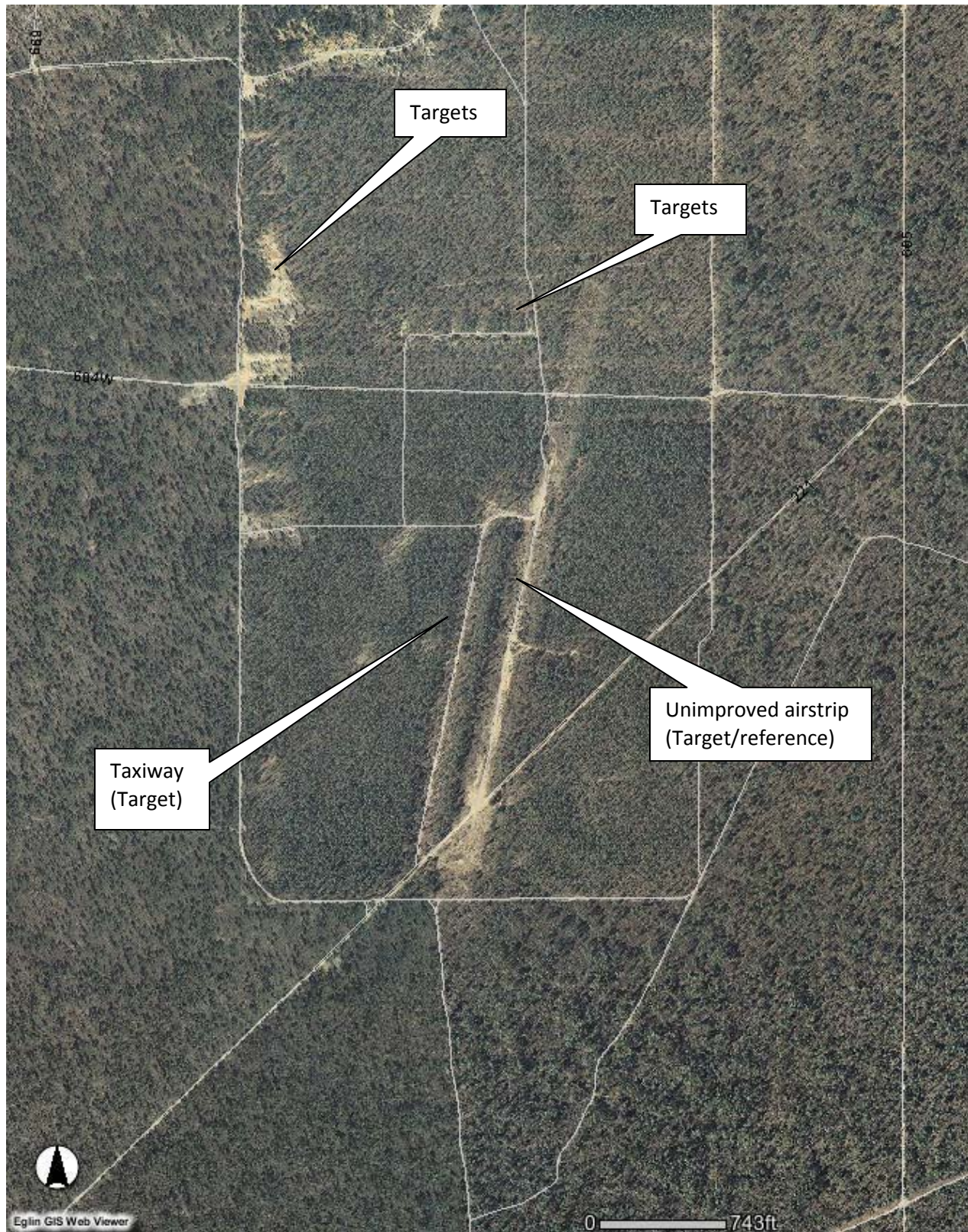


Figure 12, Test Area B-5 unimproved assault LZ

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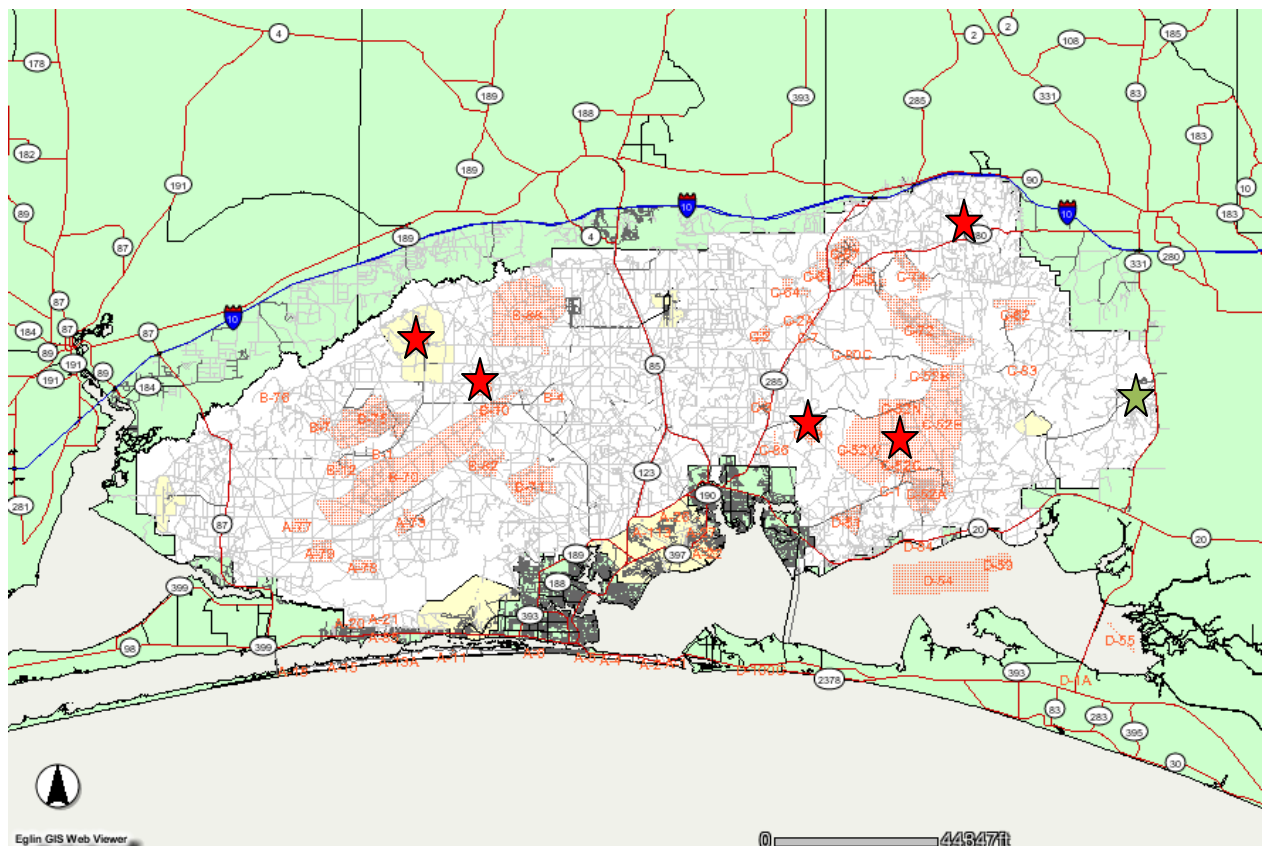


Figure 13, Potential C-130 Assault Airstrips

Test Area C-52/62

There are other areas that are in the same configuration TEST AREA B-5 being typical of them. Test Area C-52/62 has four mock airstrips that are currently used for targets and other testing. Other unimproved strips do exist as bombing/strafing fields. These fields are currently mission essential and in use. The conversion of these assets to active landing strips is undesirable as they have a high probability of UXO contamination and are cleared for their current testing and training use.

Closing any existing target area would have a severe domino effect on other range operations. Therefore; existing target airstrips will not be studied in any further detail as they do not present a reasonable alternative.

Test Area C-53

C-53 is an inactive unimproved airstrip in very poor/abandoned condition. The area is adjacent to Test Area C-3 an active testing/training field heavily involved in Air Force Research Laboratory (AFRL) missions. C-3 is another 46 Test Wing scheduled asset and is utilized by multiple agencies. Nearby Test Area C-53 is completely exposed to civilian air traffic and like LZ East is parallel to a highway (SR 285 and RR 200). It's close proximity to AFRL Test Area C-3 and the projected air traffic patterns for the F-35 and

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civil air traffic are problems for the current users. The unimproved assault strip at Test Area C-53 is not a good candidate for use which is the primary reason it is currently abandoned.

2.5.3 Matrix

The matrix at table 1 color codes **RED** for an unacceptable condition as outlined in section 1.2 NEED. **GREEN** highlight indicates a favorable condition. Un-highlighted areas are neutral, neither an insurmountable problem nor a positive attribute. The word “user” at the bottom of the table is in place of an X or checkmark to more dramatically illustrate the number of organizations involved with the various test areas. The list is not all inclusive as it leaves out many additional tests, agencies, commercial interests, deployments, and emergency responses.

Table 1, Evaluated Airstrip Suitability

| | Aux Field 1 | Aux Field 6 | LZ East | LZ Rock Hill LZ | TEST AREA B-5 | C-52/62 | C-53 |
|------------------|-----------------------|---------------------------|----------------------|-----------------|---------------|----------------------|----------|
| Pavement type(s) | asphalt | Asphalt/ clay | clay | clay | sand | sand | sand |
| Primary use | UAV / AFSOC/ 46 RANMS | 46 TW / 6RTB/ AFSOC/ 7SFG | AFSOC/ UAV/ 46 RANMS | Inactive | Inactive | Air to ground target | Inactive |
| # roads to block | 1 | 2 | 4 | 1 | 1 | 4 | 2 |
| Public impact | low | Low | moderate | low | low | low | high |
| DoD user impact | high | High | high | low | high | low | high |
| UXO | no | No | no | no | yes | yes | yes |
| 6 RTB | | User | | HLZ | user | user | |
| 7 SFG | user | User | user | HLZ | | | |
| 46 RANMS | user | User | user | | | | user |
| AL-ANG | user | | | | | | |
| AFSOC | user | User | user | HLZ | user | user | |
| 46 TW | user | User | user | | user | user | user |
| saturation | high | High | high | low | medium | high | low |

2.6 Agency Preferred Alternative

The area to be considered for detailed analysis is limited to Rock Hill. Auxiliary Field 1, Auxiliary Field 6 LZ and LZ East will experience no significant increase under the No Action Alternative, nor experience any significant decrease should 46 RANMS/DOP move operations to Rock Hill LZ exclusively. These moves technically qualify for CATEX. Under BRAC reshuffling and mission scheduling, the difference to these airfields will be largely absorbed by incoming missions. None of the existing options can handle all the 46 RANMS requirements exclusively so the logical and reasonable options are either maintain the multiple fields’ option (Auxiliary Field 1, Auxiliary Field 6, and LZ East) or re-develop Rock Hill assault airstrip.

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The redevelopment of Rock Hill as the primary and exclusive use of 46 RANMS/DOP for their missions is the agency preferred alternative. Any need for a hard-surface runway would be scheduled through 46 Test Wing on an as needed basis.

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3.0 Affected Environment

Chapters 3 and 4 are borrowed in part from a previous study of all Eglin AFB Landing Zones completed in 2008. ***Landing Zones (LZ) Final Environmental BASELINE Document***, Eglin AFB, FL 2008. Data for Rock Hill LZ (Legacy 95) is fully developed in this previous document. Other LZ, DZ and HZ studied are irrelevant as they are for helicopters, drop zone or are not developed sufficiently for C-130 or other aircraft operations. The term LZ in this context is for Assault Airstrips of sufficient size to be utilized by fixed wing cargo aircraft like a C-130. Drop zones for ground troops are designated differently than by their airfield names. This is in part due to the subset of the airfield used as a drop zone may not actually be the runway but a nearby area designated for troop and cargo drop. For environmental purposes, this is within a few feet (or on) the actual runway/taxiway of interest. This will include all of the same drainage, biology, and air concerns as studied previously.

Chapter 3 and 4 do not study alternatives A-D. These alternatives are fully within the standard operational conditions of Eglin Range activities. They have been fully studied and are acceptable with no further action. Therefore they are not repetitively studied here. Only the redevelopment of Rock Hill represents a change to the operations or environment at Eglin, therefore it is studied.

3.1 Introduction

This chapter describes the receptors that present potential mission impacts as they exist now. This section includes a discussion of the following: soils, water resources, air quality, noise, chemical materials, biological resources, safety, land use, socioeconomics, and cultural resources as they currently are.

3.2 Bounds

The boundary of the area of study is as shown in the map below (figure 14). Bounds are defined to meet three criteria:

Area A:

The area of the action. The immediate areas of ground disturbance, tree clearing, brush control and any road or fence installation.

Area B:

The area indirectly acted on. The bound is the nearest watershed. The longest lasting and measurable impacts are to streams and the water resources of the Choctawhatchee Bay. As Rock Hill LZ is bounded by two forks of the same stream, that will provide the second boundary.

Area C:

The extent of perceptible action (visual/noise). The approach and take-off of C-130 aircraft will generate noise beyond the immediate area.

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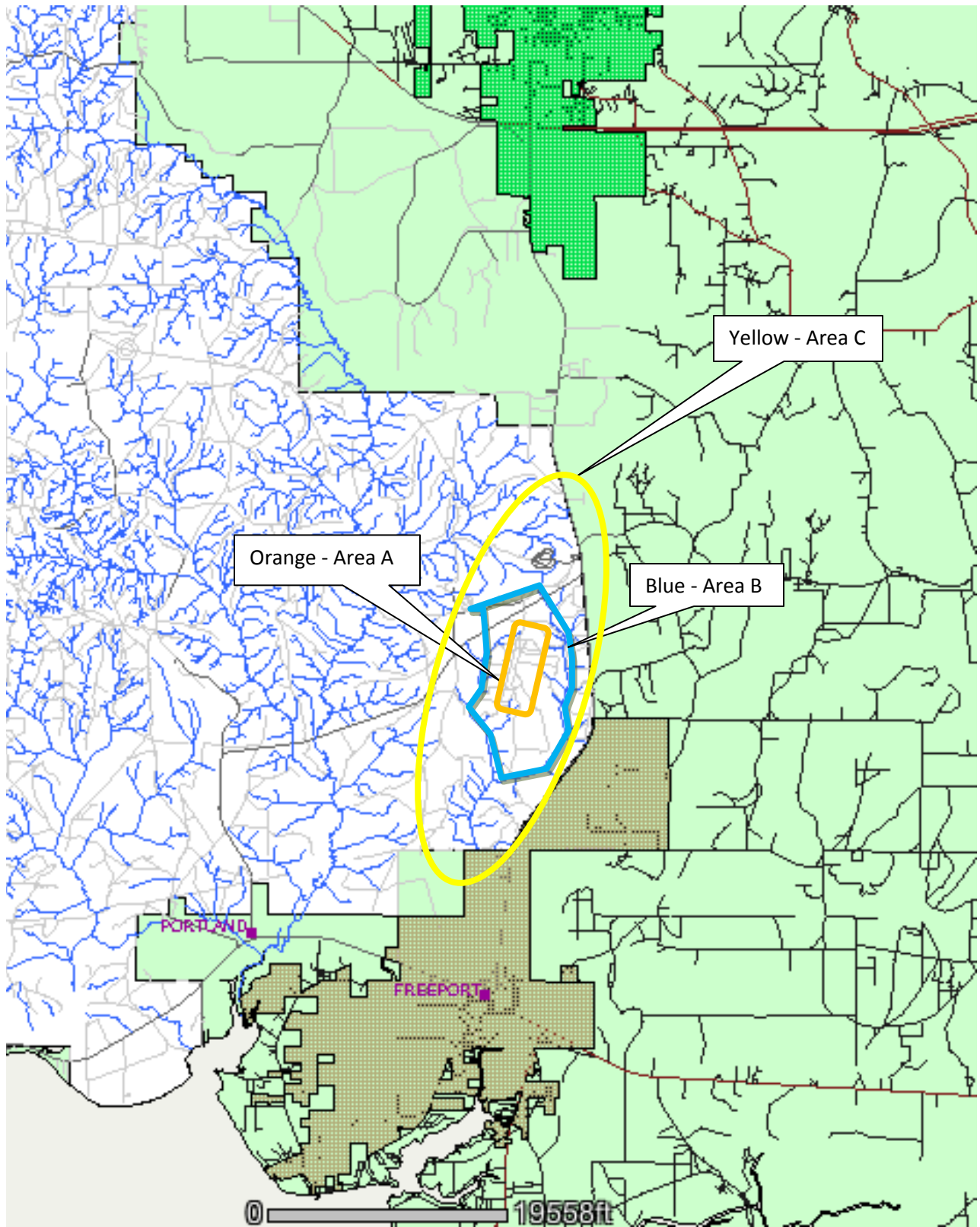


Figure 14, Bounds of impacts by area

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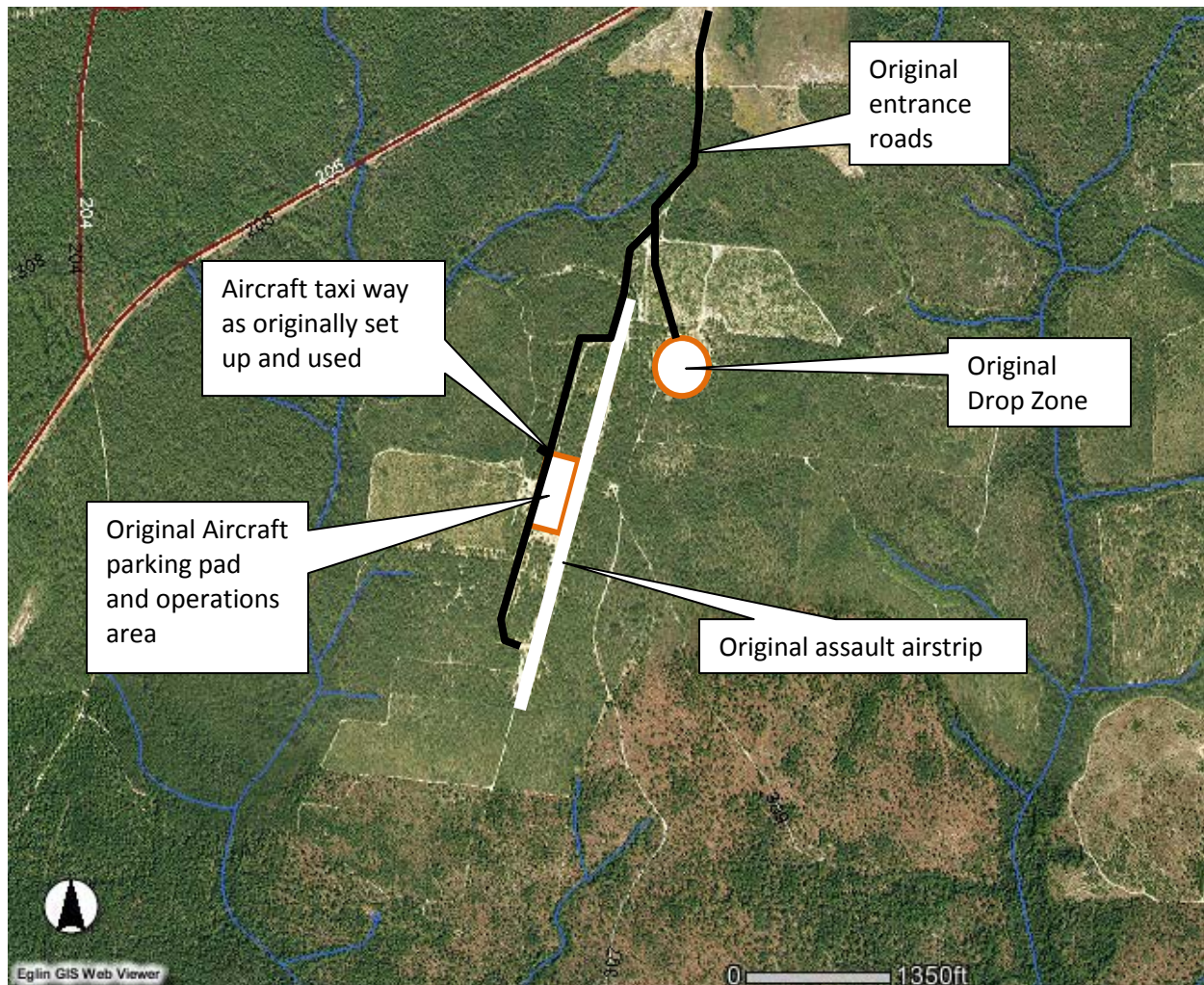


Figure 15, original Rock Hill LZ

Area A (figure 13) is currently a stable environment with underbrush and small trees growing over much of the old airfield and drop zone. There is erosion on the bare airfield surface having left an 18 inch trenches at the midpoint of the field. The erosion can reasonably be assumed to have occurred in the 20 years since the last use and as recently as in the past 5 years if maintenance was completed when the field was last used as an encampment by the Florida National Guard. There is no evidence that petroleum was stored or released on-site for as no staining, structures or tanks of any kind are evident on-site.

Area B (figure 13) is bounded by both forks of Four Mile Creek surrounding the site. East Four Mile Creek is impacted by US 331 and the farm activity off the reservation to the east (currently a game preserve). The area within the bounds is forest; a significant portion has been harvested and perhaps burned within the past 10 years (tan spots in the forest). The area has had controlled burns over a significant portion of the land mass.

The area is currently a pocket of low activity as it is bounded by other military operations and private property. It is significantly isolated by poor roads (RR 307/309) and the buffers around the nearby target areas.

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Range roads 307 and 309 (Figure 16) are both dead-end roads in this area. They are in poor condition, unmaintained since the last logging operation in the area. The roads are unpaved sand surface, with no evidence of having clay or gravel surfacing. RR 307 is passable but rough. RR 309 is heavily overgrown and impassable most of the year due to standing water on the north end. Closure of portions of RR 309 is recommended to protect marshy area the road crosses. The area is considered good deer hunting grounds with open grazing areas and little traffic. Hunting activities have been managed to maintain a healthy population in the area. The roads are passable by trucks and high clearance vehicles. The deterioration of the roads has caused the roads to “drift” and shift around obstacles forming a windy natural path unsuited to heavy equipment like fire trucks and k-loaders. There is evidence of camping along RR 309 in the more isolated areas.

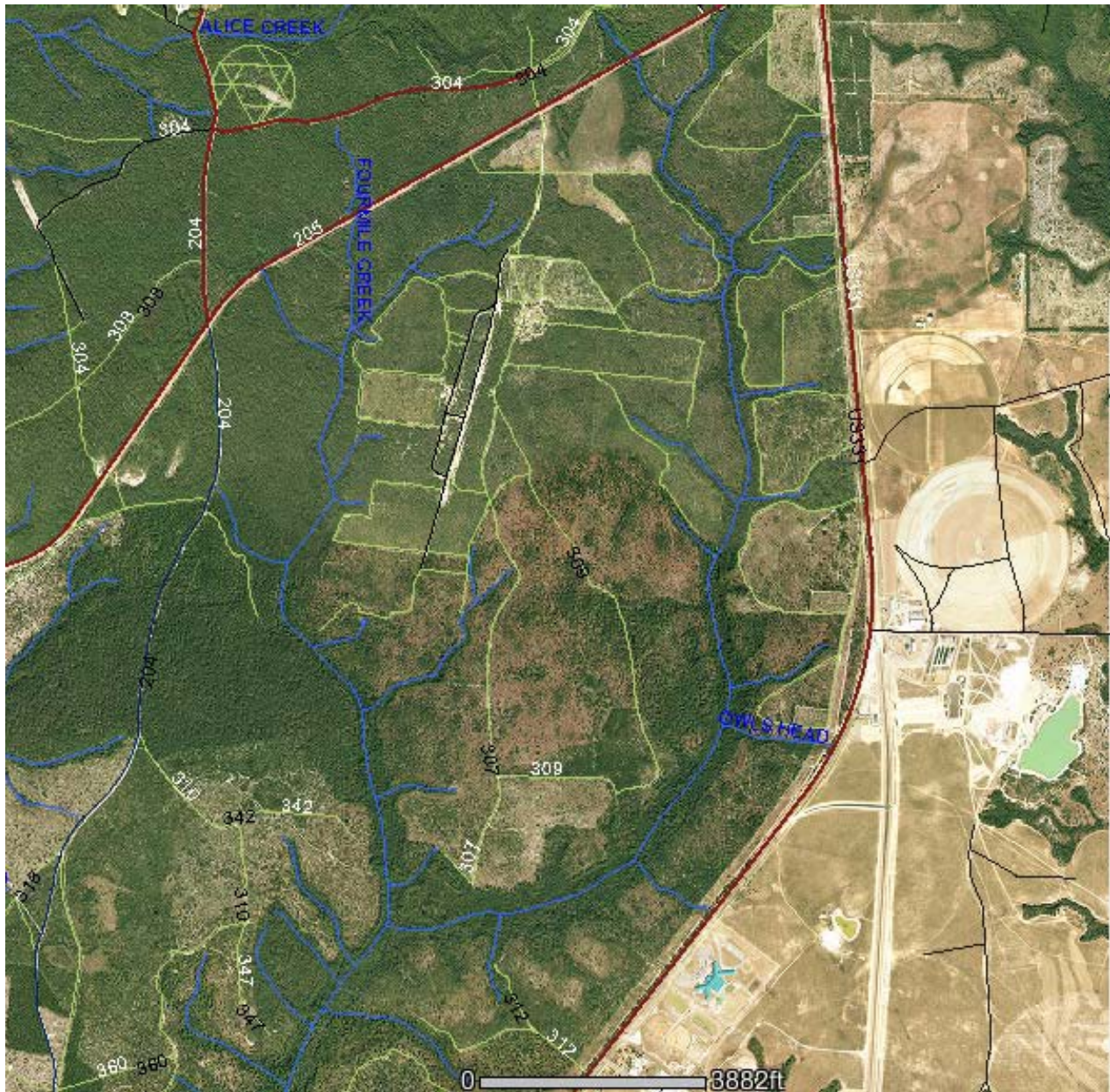


Figure 16, Area B as bounded by Four Mile Creek forks

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Area C (Figure 14) is the area under the flight path projected for this project. The area is within the existing military airspace and subject to C-130, CV-22, F-35, helicopter and other flight activity on a regular basis. The area is regularly treated to noise from explosions, air to ground fire, and rocket launches from nearby C-52 and C-62. The area is forested, with clearings for homes and transportation off the Eglin reservation. Sound attenuation by the forest helps reduce perceived military activity noise.

3.3 Resources Within the Affected Environment

This section lists and describes the resources as they exist within the bounds of the eastern end of the Eglin Reservation (Rock Hill). The topics are 1) soil, 2) water, 3) air, 4) noise, 5) chemical materials, 6) biological, 7) safety/restricted area, 8) land use, 9) socioeconomics, and 10) cultural.

3.3.1 Soils

This section provides descriptions of the qualitative and quantitative characteristics of soils in the LZ areas of Eglin AFB. The Eglin Reservation is home to a diversity of soil types with unique physical and chemical characteristics that, combined with a subtropical climate, partly determine the structure and function of these areas' unique ecosystems. There are approximately 56 soil types within the LZ [110 examined] areas of Eglin (U.S. Air Force, 2003).

SOIL TYPES

The most abundant type of soil within the LZ areas is the Lakeland soil series. The second most abundant soil type is Bonifay-Troup. The Lakeland soil series consists of very deep, strongly acidic soils that formed in thick beds of eolian, fluvial, or marine sands on broad uplands in the Lower Coastal Plain (U.S. Air Force, 2003). The Coastal Plain ranges from nearly flat to very steep uplands. The depth to the seasonal water table is more than 80 inches. All horizons are sand or fine sand with 5 to 10 percent, silt plus clay in the 10- to 40-inch control section. Slopes are dominantly 0 to 12 percent, but range to 85 percent in some areas.

The Bonifay-Troup series consists of deep, somewhat excessively drained soils with thick sandy surface and subsurface layers and loamy subsoils. These formed in nearly level to steep unconsolidated sandy and loamy marine sediments on Coastal Plain uplands (U.S. Air Force, 2003). Runoff is slow, and permeability is moderate to rapid. Slopes are predominantly 0 to 15 percent, but range up to 40 percent. Gravels of quartz and ironstone nodules range up to 10 percent in the solum (soil mixture of sand with loam).

The main concern for soils in is the potential for erosion [Rock Hill LZ and LZ East in particular]. Accelerated erosion caused by humans occurs at rates much greater than natural erosion conditions and has been shown to have detrimental effects on soils and ecosystems. The susceptibility of the soil to erosion is primarily dependent on factors such as soil texture, moisture content, pH, and ionic strength of the eroding water. Soil erosion generally decreases with increasing clay and organic matter content, whereas uniform silts and sands tend to exhibit high soil erosion. Slope angle and length are the primary topographic variables influencing rainfall erosion. Vegetation plays a pivotal role in the interception and diffusion of water energy from rain splash and overland water flows.

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Areas of the Reservation where woodland management is employed (i.e., lack of clearing and development) have a slight erosion potential for all of the soil series in the LZ areas.

LZs are by necessity cleared areas. In general, cleared areas have a higher susceptibility to soil erosion from water and wind. Therefore, in areas where soil series are defined as highly erodible locations of cleared areas within areas of steep slopes have a higher potential for erosion.

Rock Hill soils are predominately sand across the majority of the area, muck in the stream bed and marshy areas, with the north area predominately loamy sand. The slope of the south end of the assault strip slopes significantly contributing to sand movement. Erosion is not significant in this area due in part to the overgrowth of forest and brush.

Table 2, Soil Series and Characteristics

| Characteristics* | Soil Series |
|---|---|
| Greater than 90 percent sand to a depth of 6 feet or more and clay content generally less than 3 percent | Chipley, Foxworth, Kureb, Lakeland, Leon, Mandarin, and Resota |
| Excessively sandy soils that become very droughty during periods of low precipitation and are rapidly saturated during major rainfall events | Chipley, Foxworth, Tureb, Lakeland, and Mandarin |
| Hydraulic conductivity values greater than 34 centimeters per hour retaining small amount of available water | Foxworth, Kureb, and Lakeland throughout the profile and Chipley, Hurricane, and Resota to a depth of about 3 feet |
| Yellowish-red nodules indicate high iron and magnesium content | Lakeland, Leefield, and Notcher and slightly higher values paralleling high clay content in soil horizons below the surface for Bonifay, Dothan, Fuquay, and Troup |
| Calcium is the dominant base with extractable calcium and magnesium rarely exceeding 0.5 milliequivalents per 100 grams of surface soil | Nearly all soils |
| Organic matter content: | |
| Less than 1 percent in all horizons | Bonifay, Dothan, Fuquay, Kureb, Resota, and Troup |
| Ranges from 1 to 2.7 percent in the surface layer | Bigbee, Chipley, Foxworth, Lakeland, Leefield, Notcher, and Orangeburg |
| Increases in horizons below surface | Hurricane, Leon, Mandarin, and Resota |

Source: USDA, 1995

*These characteristics are for undisturbed soils under natural conditions.

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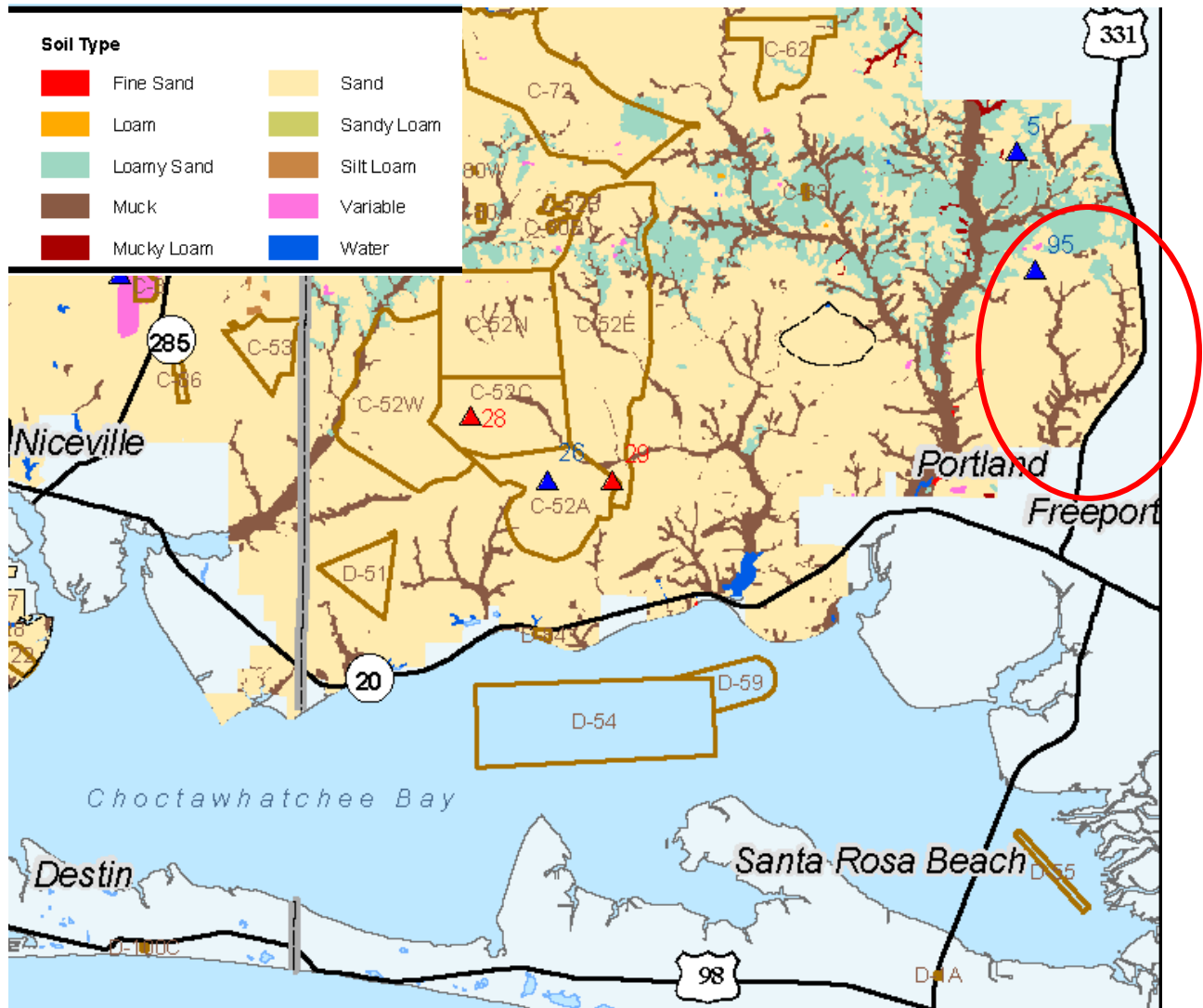


Figure 17, Primary soils on Eglin AFB

3.3.2 Water Resources

Groundwater

Two major aquifers underlie Eglin AFB: the Surficial Aquifer, also known as the Sand and Gravel Aquifer, and the Floridan Aquifer. The Sand and Gravel Aquifer is a generally unconfined, near-surface unit separated from the underlying confined Floridan Aquifer by the low-permeability Pensacola Clay confining bed. The Sand and Gravel Aquifer is mainly composed of clean, fine-to-coarse sand and gravel, while the Floridan Aquifer consists of a thick sequence of inter-bedded limestone and dolomite. Water quality of the Sand and Gravel Aquifer is generally good, but it is vulnerable to contamination from surface pollutants due to its proximity to the ground surface (U.S. Air Force, 2003).

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Water from the Sand and Gravel Aquifer is not a primary source of domestic or public water supply on Eglin because of the large quantities of higher quality water available from the underlying upper limestone of the Floridan Aquifer (U.S. Air Force, 2003). The quality of water drawn from the upper limestone of the Floridan Aquifer is suitable for most uses, and is the primary source of water used at Eglin AFB. The top of the aquifer is about 50 feet below mean sea level (MSL) in the northeast corner of the base and increases to about 700 feet below MSL in the southwestern area of the base (McKinnon and Pratt, 1998).

There are no known wells at the Rock Hill site; however there are water wells on the north side of RR 205. Their current status is uncertain.

Surface Water

Surface waters are any waters that lie above groundwater, such as streams, springs, ponds, lakes, rivers, bayous, and bays. Most of the streams in the interstitial area of Eglin are classified as seepage streams or blackwater streams. Seepage streams are clear to lightly colored, relatively short, shallow, and narrow water courses originating from shallow ground waters that have percolated through deep, sandy, upland soils. Blackwater streams are steep-banked streams that characteristically have tea-colored waters laden with tannins, particulates, and dissolved organic matter and iron from swamps and marshes that feed into the streams. These streams eventually flow into estuarine drainage areas, such as Rocky, Boggy, Alaqua, and LaGrange Bayous, out into the Choctawhatchee Bay. More detailed descriptions of the different aquatic systems found on Eglin are located in the Eglin Environmental Baseline Survey Resource Appendices (U.S. Air Force, 2003). Four Mile Creek is a blackwater stream.

The state of Florida has developed and retains jurisdiction for surface water quality standards for all waters of the state in accordance with the provisions of the Clean Water Act (CWA). Section 303 of the CWA requires the state to establish water quality standards for waterways, identify those that fail to meet the standards, and take action to clean up these waterways. Florida recently adopted the Impaired Waters Rule (IWR) (Florida Administrative Code [FAC] Chapter 62-303), with amendments, as the new methodology for assessing the state's waters for 303(d) listing. The Florida Department of Environmental Protection (FDEP) submits names of surface waters that are determined to be impaired, using the methodology in the IWR and adopted by secretarial order, to the U.S. Environmental Protection Agency (USEPA) for approval as Florida's 303(d) list. The FDEP submits updates to Florida's 303(d) List of Impaired Surface Waters to the USEPA every two years. The 2006 Integrated Water Quality Assessment for Florida: 2006 305(b) Report and 303(d) List Update (FDEP, 2006a) satisfies the listing and reporting requirements of Sections 303(d) and 305(b) of the CWA.

The FDEP divides river basins across Florida into groups, which the FDEP addresses according to an established rotation schedule. The eastern portion of Eglin AFB drains to the Choctawhatchee-St. Andrews Bay Basin (Group 3) and the west side drains into the Pensacola Bay Basin (Group 4) (FDEP, 2006a). Surface waters on Eglin AFB are Class III waters, meaning that they are designated for "recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife" (FDEP, 2006a). Impaired waters on or adjacent to Eglin AFB include: Boggy Bayou, Poquito Bayou, Rocky Bayou State Park, Choctawhatchee Bay, East Bay, and Yellow River (FDEP, 2006b and FDEP, 2007).

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Figure 18, Water resources at Eglin AFB

The FAC Sections 62-301 and 62-302, Surface Waters of the State, identifies certain state waters that have been designated Outstanding Florida Waters (OFWs). The regulatory significance of this designation is that the FDEP cannot allow ambient water quality to significantly decrease through the issuance of permits for direct or indirect pollutant discharge (FDEP, 2002). Waters listed as OFWs include surface waters in national parks, aquatic preserves, wildlife refuges, marine sanctuaries, wild and scenic rivers, state aquatic preserves, and waters in areas acquired through donation, trade, or purchase. Special Waters, also listed as OFWs, have ecological and recreational importance but are not protected. It is the FDEP's policy to afford the highest protection to Outstanding Florida Waters. No degradation of water quality, other than that allowed in Rule 62-4.2.4.2(1) and (2), is permitted in these waters.

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State designated OFWs directly adjacent to Eglin AFB include Choctawhatchee River, Fred Gannon Rocky Bayou State Park and Aquatic Preserve, and the Yellow River Marsh Aquatic Preserve. Overall water quality in Choctawhatchee Bay is reported to be good, as defined by a FDEP water quality index (Hand et al., 1994). FDEP's Environmental Regulation Commission has classified Rocky Bayou, located in northwest Choctawhatchee Bay, as an OFW, which is recognized as having exceptional recreational or ecological significance (FDNR, 1991).

Rock Hill drains directly to the Four Mile Creek and into the Choctawhatchee Bay.

Wetlands

Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at, or near, the surface, or the land is covered by shallow water (USFWS, 1979). Abiotic and biotic environmental factors such as morphology, hydrology, water chemistry, soil characteristics, and vegetation contribute to the diversity of wetland community types. The term wetlands describe marshes, swamps, bogs, and similar areas. Local hydrology and soil saturation largely affects soil formation and development, as well as the plant and animal communities found in wetland areas (USEPA, 1995). Wetlands are often categorized by water patterns (the frequency or duration of flooding) and location in relation to upland areas and water bodies. Wetland hydrology is considered one of the most important factors in establishing and maintaining wetland processes (Mitsch and Gosselink, 2000).

Wetlands are defined in the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE, 1987). The majority of jurisdictional wetlands (wetlands that fall under state or federal regulatory authority) in the United States are described using the three wetland delineation criteria: hydrophytic vegetation, hydric soils, and hydrology (USACE, 1987).

USACE is the lead agency in protecting wetland resources. This agency maintains jurisdiction over federal wetlands (33 CFR 328.3) under Section 404 of the CWA (30 CFR 330) and Section 10 of the Rivers and Harbors Act (30 CFR 329). The USEPA assists USACE (in an administrative capacity) in the protection of wetlands (40 CFR 225.1 to 233.71). The state of Florida regulates wetlands under the Wetlands/Environmental Resource Permit program under Part IV, Florida Statutes Section 373. Furthermore, EO 11990, Protection of Wetlands, offers additional protection to these resources. In addition, the USFWS and the National Marine Fisheries Service (NMFS) have important advisory roles. The FDEP's Chapter 62-312, Dredge and Fill Program, affords regulatory protection to wetland resources (i.e., protection from excavating or filling a wetlands area with dirt, rip-rap, etc.) at the state level. FDEP issues a Section 401 certification under the authority of the CWA (40 CFR 230.10[b]). Section 401 of the CWA requires federal agencies to obtain certification from the state before issuing permits that would result in increased pollutant loads to a body of water. The certification is issued only if such increased loads would not cause or contribute to exceeding water quality standards (USEPA, 2006).

In total, Eglin AFB supports an average of 63,863 acres of jurisdictional wetlands (dependent on seasonal fluctuations), which is approximately 14 percent of the total land area (U.S. Air Force, 2005). These areas include floodplain forest, floodplain swamp, bottomland forest, wet prairie, hydric hammock,

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blackwater stream, seepage streams, seepage slopes, marsh lake, and bogs (U.S. Air Force, 2003). These systems help to promote regional biodiversity, improve water quality, and provide floodwater storage.

Four Mile Creek represents the drainage of the proposed airfield. The roads in the area do cross the drainages at low water crossings in several areas. The traffic is quite light except during hunting season representing little contribution to sedimentation.

Floodplains

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, wetlands, and rivers), where flooding events periodically cover flat areas with water. Floodplain vegetation and soils act as water filters, intercepting surface water runoff before it reaches lakes, streams, or rivers, and also stores floodwaters during flood events. This filtration process aids in the removal of excess nutrients, pollutants, and sediments from the water and helps reduce the need for costly cleanups and sediment removal. Conversely, if soils and sediments are contaminated, these contaminants can then be deposited on floodplains.

Federal agencies must evaluate any proposed activity to determine whether it would occur within a floodplain. Agencies must address those areas that have a 1 percent chance of floodwater inundation in a given year (also known as a 100-year floodplain). Executive Order (EO) 11988, Floodplain Management, requires federal agencies to avoid adverse impacts associated with the occupancy and modification of floodplains and to avoid floodplain development whenever possible. Parts of the floodplain that are also wetlands receive further protection under USACE's Section 404 Permit Program.

Rock Hill does have areas that may flood within the banks of the Four Mile Creek bed. As the area of concern is significantly elevated, it has no characters of a floodplain.

3.3.3 Air Quality

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The levels of pollutants are generally expressed on a concentration basis in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

The baseline standards for pollutant concentrations are the National Ambient Air Quality Standards (NAAQS) and state air quality standards. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare.

Based on measured ambient air pollutant concentrations, the USEPA designates whether areas of the United States meet the NAAQS. Those areas demonstrating compliance with the NAAQS are considered "attainment" areas, while those that are not are known as "nonattainment" areas. Those areas that cannot be classified on the basis of available information for a particular pollutant are "unclassifiable" but are treated as attainment areas until proven otherwise.

Greenhouse Gases

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. These emissions are generated by both natural processes and human activities. The accumulation of GHGs in the atmosphere regulates

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the earth's temperature. The U.S. Global Change Research Program report *Global Climate Change Impacts in the United States* states the following:

“Observations show that warming of the climate is unequivocal. The global warming observed over the past 50 years is due primarily to human-induced emissions of heat-trapping gases. These emissions come mainly from the burning of fossil fuels (coal, oil, and gas), with important contributions from the clearing of forests, agricultural practices, and other activities.

Warming over this century is projected to be considerably greater than over the last century. The global average temperature since 1900 has risen by about 1.5 degrees Fahrenheit (°F). By 2100, it is projected to rise another 2 to 11.5°F. The U.S. average temperature has risen by a comparable amount and is very likely to rise more than the global average over this century, with some variation from place to place. Several factors will determine future temperature increases. Increases at the lower end of this range are more likely if global heat-trapping gas emissions are cut substantially. If emissions continue to rise at or near current rates, temperature increases are more likely to be near the upper end of the range. Volcanic eruptions or other natural variations could temporarily counteract some of the human-induced warming, slowing the rise in global temperature, but these effects would only last a few years.

Reducing emissions of carbon dioxide would lessen warming over this century and beyond. Sizable early cuts in emissions would significantly reduce the pace and the overall amount of climate change. Earlier cuts in emissions would have a greater effect in reducing climate change than comparable reductions made later. In addition, reducing emissions of some shorter-lived heat-trapping gases, such as methane, and some types of particles, such as soot, would begin to reduce warming within weeks to decades.

Climate-related changes have already been observed globally and in the United States. These include increases in air and water temperatures, reduced frost days, increased frequency and intensity of heavy downpours, a rise in sea level, and reduced snow cover, glaciers, permafrost, and sea ice. A longer ice-free period on lakes and rivers, lengthening of the growing season, and increased water vapor in the atmosphere have also been observed. Over the past 30 years, temperatures have risen faster in winter than in any other season, with average winter temperatures in the Midwest and northern Great Plains increasing more than 7°F. Some of the changes have been faster than previous assessments had suggested.

These climate-related changes are expected to continue while new ones develop. Likely future changes for the United States and surrounding coastal waters include more intense hurricanes with related increases in wind, rain, and storm surges (but not necessarily an increase in the number of these storms that make landfall), as well as drier conditions in the Southwest and Caribbean. These changes will affect human health, water supply, agriculture, coastal areas, and many other aspects of society and the natural environment.” (Karl et al., 2009).

While regional and state impacts are more difficult to predict than large regional or global impacts, a report by the Florida Governor’s Action Team on Energy and Climate Change (2010) says that regional models indicate the following possible impacts in the state of Florida:

Sea level rise could lead to flooding of low-lying areas, erosion of beaches, loss of coastal wetlands, intrusion of salt water into water supplies, and increased vulnerability of coastal areas to storms and hurricanes.

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As climate changes, this could cause some plants and animals to go extinct, some to decline or increase in population, and others migrate to areas with more favorable conditions. For example, along the coast, fish that need colder temperatures to survive could migrate north, while more tropical varieties could move up the coast into Florida.

Diseases and pests with current tropical ranges could invade Florida, as have West Nile virus and Africanized honey bees in Florida's panhandle. Crops and trees that need cooler climates may not grow as well in Florida, while more tropical varieties might do better.

More severe storms and droughts could affect crop production, pests, and growth rates.

GHGs include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and several hydrocarbons (HCs) and chlorofluorocarbons (CFCs). Each GHG has an estimated global warming potential (GWP), which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface. The GWP of a particular gas provides a relative basis for calculating its carbon dioxide equivalent (CO₂-e) or the amount of CO₂ that emissions of that gas would be equal to. CO₂ has a GWP of 1, and is, therefore, the standard by which all other GHGs are measured.

Greenhouse Gases (Region of Influence)

The potential effects of GHG emissions from the Proposed Action are by nature global. Given the global nature of climate change and the current state of the science, it is not useful at this time to attempt to link the emissions quantified for local actions to any specific climatological change or resulting environmental impact.

The USEPA has recently promulgated several final regulations involving GHGs either under the authority of the CAA, or as directed by Congress, but none of them apply directly to the Proposed Action. Under the CAA, USEPA has recently promulgated an endangerment finding involving motor vehicle tailpipe emissions of GHGs ("Endangerment and Cause or Contribute Findings for Greenhouse Gases under section 202(a) of the Clean Air Act", 74 Federal Register 66496, December 15, 2009); a regulation to control light duty automobile exhaust emissions of GHGs ("Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards", 75 Federal Register 25324, May 7, 2010); and a tailoring rule establishing a Prevention of Significant Deterioration (PSD) thresholds for major stationary sources of GHGs ("Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule", 75 Federal Register 31514, June 3, 2010). In addition, as directed by Congress, USEPA promulgated a final GHG reporting rule ("Mandatory Reporting of Greenhouse Gases", 74 Federal Register 56260, October 30, 2009).

In its final endangerment finding, USEPA determined that GHGs threaten the public health and welfare of the American people and GHG emissions from on-road vehicles contribute to that threat. In the light-duty vehicle rule precipitated by the endangerment finding, USEPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) finalized a joint rule to establish a national program consisting of new standards that apply to the manufacturers of model year 2012 through 2016 light-duty vehicles that will reduce greenhouse gas emissions and improve fuel economy. As a result of the light-duty vehicle rule, USEPA believed that the tailoring rule for PSD and Title V permitting was necessary.

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The tailoring rule is necessary because with promulgation of the GHG rule for light duty vehicles, PSD and Title V applicability requirements are triggered for stationary sources of GHG emissions as of 2 January 2011. The rule establishes two initial phase-in steps. Step 1 begins on 2 January 2011, and covers only sources and modifications that would otherwise undergo PSD or Title V permitting based on emissions of non-GHG pollutants. No additional PSD permitting actions or Title V permitting will be necessary solely due to GHG emissions during this period. However, a BACT review of the GHG emissions may be required if the PSD permit process is under way for non-GHG emissions and the net increase in GHG emissions exceeds 75,000 tons per year (tpy) carbon dioxide equivalent (CO₂-e). Sources with Title V permits must address GHG requirements when they apply for, renew, or revise their permits. Step 2 begins on 1 July 2011, and covers new large sources of GHG emissions that have the potential to emit 100,000 tpy CO₂-e or more (provided that they also emit GHGs or some other regulated NSR pollutant above the 100/250 tpy (mass based) statutory thresholds), and modifications at existing sources that increase netGHG emissions by 75,000 tpy CO₂-e or more, (provided that it also results in an increase of GHG emissions on a mass basis). GHG emission sources that equal or exceed the 100,000 tpy CO₂-e threshold will be required to obtain a Title V permit if they do not already have one. Under the mandatory reporting rule, fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, as well as facilities that emit 25,000 metric tons or more of CO₂ equivalent-e per year, will be required to report GHG emissions data to USEPA annually. The first annual reports will cover calendar year 2010 and must be submitted to USEPA in early 2011. Affected facilities were required to have a monitoring plan in place by 1 April 2009. Eglin AFB has prepared a *Greenhouse Gas Monitoring Plan* (U.S. Air Force, 2010), which was published 1 April 2010, and a *Greenhouse Gas Baseline Inventory Report*, which was finalized in May 2010 (U.S. Air Force, 2010a).

On 18 February 2010, the CEQ released its *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, which suggests that proposed actions that would be reasonably anticipated to emit 25,000 metric tons or more of carbon dioxide-equivalent (CO₂-e) GHG emissions should be evaluated by quantitative and qualitative assessments. This is not a threshold of significance but a minimum level that would require consideration in NEPA documentation. The purpose of quantitative analysis of CO₂-e GHG emissions in this SEIS is for its potential usefulness in making reasoned choices among alternatives.

Regional Air Quality

FDEP operates air quality monitors in various counties throughout the state (FDEP, 2004). Although there are no ambient monitors in Okaloosa County, there are monitors in neighboring Santa Rosa and Bay Counties. These counties are classified as attainment areas, as all counties within Florida are classified as attainment areas for the NAAQS (USEPA, 2007)

Baseline Emissions

An air emissions inventory qualitatively and quantitatively describes the amount of emissions from a facility or within an area. Emissions inventories are designed to locate pollution sources; define the type and size of the sources; characterize emissions from each source; and estimate total mass emissions generated over a period of time, normally a year. These annual rates are typically represented in tons per year. Inventory data establish relative contributions to air pollution concerns by classifying sources and determining the adequacy as well as the necessity of air regulations. Accurate inventories are imperative for the development of appropriate air quality regulatory policy.

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The most recent air emissions inventories for Eglin AFB quantify emissions from stationary and mobile sources based on calendar year activities. Stationary sources include equipment/processes such as boilers, electric generators, surface coating, and fuels handling operations. Mobile sources include motor vehicles, aerospace ground support equipment, and aircraft operations.

For comparison purposes, (see table) the USEPA's 2002 National Emissions Inventory (NEI) data for Okaloosa, Santa Rosa, and Walton Counties (USEPA, 2002). The county data include emissions data from point sources, area sources, and mobile sources. Point sources are stationary sources that can be identified by name and location. Area sources are point sources whose emissions are too small to track individually, such as a home or small office building or a diffuse stationary source, such as wildfires or agricultural tilling. Mobile sources are any kind of vehicle or equipment with a gasoline or diesel engine, an airplane, or a ship. Two types of mobile sources are considered: on-road and non-road. On-road mobile sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Non-road sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles (USEPA, 2005).

For this document, a threshold of individual pollutant emissions not exceeding 10 percent of the total Santa Rosa, Okaloosa, and Walton County emissions for each pollutant has been selected (Shipley Associates, 1995).

The Rock Hill area is currently in attainment.

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Table 3, Baseline Emissions Inventory for Okaloosa, Santa Rosa, and Walton Counties

| Source Type | Emissions (tons/year) | | | | |
|----------------------------|-----------------------|---------------|---------------|--------------|---------------|
| | CO | NOX | PM10 | SOX | VOCs |
| Okaloosa County | | | | | |
| Area Sources | 1,867 | 281 | 8,397 | 462 | 4,527 |
| Non-Road Mobile | 16,150 | 1,099 | 162 | 109 | 1,897 |
| On-Road Mobile | 45,228 | 5,703 | 153 | 256 | 3,829 |
| Point Sources | 28 | 49 | 24 | 12 | 79 |
| Total | 63,274 | 7,132 | 8,736 | 839 | 10,333 |
| Santa Rosa County | | | | | |
| Area Sources | 2,142 | 233 | 13,265 | 323 | 3,291 |
| Non-Road Mobile | 9,806 | 950 | 120 | 89 | 1,524 |
| On-Road Mobile | 40,237 | 5,341 | 147 | 238 | 3,286 |
| Point Sources | 867 | 4,570 | 776 | 2,362 | 418 |
| Total | 53,052 | 11,095 | 14,308 | 3,012 | 8,519 |
| Walton County | | | | | |
| Area Sources | 1,060 | 77 | 7,381 | 21 | 1,515 |
| Non-Road Mobile | 8,892 | 741 | 208 | 67 | 1,675 |
| On-Road Mobile | 23,915 | 3,849 | 190 | 153 | 1,671 |
| Point Sources | 25 | 14 | 6 | 4 | 28 |
| Total | 33,893 | 4,681 | 7,785 | 246 | 4,890 |
| Region of Influence | | | | | |
| Area Sources | 5,069 | 591 | 29,042 | 805 | 9,333 |
| Non-Road Mobile | 34,849 | 2,790 | 491 | 266 | 5,097 |
| On-Road Mobile | 109,380 | 14,894 | 490 | 648 | 8,787 |
| Point Sources | 921 | 4,633 | 806 | 2,378 | 526 |
| Total | 150,219 | 22,909 | 30,829 | 4,097 | 23,742 |

Source: USEPA, 2002

CO = Carbon Monoxide; NOx = Nitrogen Oxides; PM10 = Particulate Matter; SOx = Sulfur Oxides;
VOCs = Volatile Organic Compounds

3.3.4 Noise

Noise is defined as any unwanted sound. Defining characteristics of noise include sound level (amplitude), frequency (pitch), and duration. Each of these characteristics plays a role in determining the intrusiveness and level of impact of the noise on a noise receptor. The term “noise receptor” is used in this document to mean any person, animal, or object that hears or is affected by noise.

Sound levels are recorded on a logarithmic decibel (dB) scale, reflecting the relative way in which the ear perceives differences in sound energy levels. A sound level that is 10 dB higher than another would normally be perceived as twice as loud, while a sound level that is 20 dB higher than another would be perceived as four times as loud. Under laboratory conditions, the healthy human ear can detect a change in sound level as small as 1 dB. Under most non-laboratory conditions, the typical human ear can detect changes of about 3 dB.

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Sound measurement may be further refined through the use of frequency “weighting”. The normal human ear can detect sounds that range in frequency from about 20 hertz (Hz) to 20,000 Hz (FICON, 1992). However, all sounds throughout this range are not heard equally well. In “A-weighted” measurements, the frequencies in the 1,000 to 4,000 Hz range are emphasized because these are the frequencies heard best by the human ear. Sound level measurements weighted in this way are termed A-weighted decibels (dBA). Unless otherwise noted, all sound levels referenced in this document can be assumed to be A-weighted.

Typically, the sound level at any given location changes constantly; for example, the sound level changes continuously when an aircraft flies by, starting at the ambient (background) level, increasing to a maximum when the aircraft passes closest to the receptor, and then decreasing to ambient levels when the aircraft flies into the distance. The term Maximum Sound Level, or “Lmax”, represents the sound level at the instant during an aircraft overflight when sound is at its maximum.

Sound Metrics

Because both the duration and frequency of noise events also play a role in determining overall noise impact, several metrics are used that account for these factors. Day-Night Average Sound Level (DNL) represents aircraft noise level averaged over a 24-hour period with a 10 dB penalty to flights occurring between 10:00 pm and 7:00 am to account for the added intrusiveness of noise during these hours. It is important to recognize that the DNL metric does not represent the noise heard at any single point in time, but rather a weighted average of noise levels that occur over the course of a day. The DNL metric has been endorsed by several federal agencies as being the best descriptor of general noise conditions in the vicinity of airfields (USEPA, 1974; FICUN, 1980).

Effects of Noise

Annoyance, speech interference, sleep interference, human health impacts, structural damage, and wildlife impacts have all been associated with noise.

Annoyance is the most common effect of aircraft noise on humans. Aircraft noise often interferes with activities such as conversation, watching television, using a telephone, listening to the radio, and sleeping. This interference often contributes to individuals becoming annoyed. Whether or not an individual becomes annoyed by a particular noise is highly dependent on emotional and situational variables of the listener as well as the physical properties of the noise (FAA, 1985). However, when assessed over long periods of time and with large groups of people, a strong correlation exists between the percentage of people highly annoyed by noise and the time-averaged noise exposure level in an area (Schultz, 1978; Finegold et al., 1994). This finding is based on surveys of groups of people exposed to various intensities of transportation noise. As discussed earlier in this section, DNL (A-weighted) is used to assess noise for which audible sound is the major concern (e.g., subsonic aircraft noise, small-arms fire). C-weighted Decibel Day-Night Average Noise Level (CDNL) is used to assess noise in which vibration and low-frequency components are a major concern (e.g., sonic booms, high-explosive munitions noise).

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Table 4, Relationship Between Noise Level and Percent of Population Highly Annoyed

| Criteria | Noise Level | | |
|---|--------------------|-------------------|--------------------|
| A-Weighted Average Noise Levels (Continuous Noise) | < 65 dB | 65–75 dB | > 75 dB |
| C-Weighted Average Noise Levels (Impulsive Noise) | < 62 dBC | 62–70 dBC | >70 dBC |
| Unweighted Peak Noise Levels (Small Arms Noise) | ≤87 dBP | 87-104 dBP | >104 dBP |
| Percent of Population Highly Annoyed | < 15% | 15%–39% | >39% |

Source: U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM), 2005;
 < = less than; > = greater than; dB = decibels; dBC = C-weighted decibels; dBP = unweighted peak sound pressure level

Note: The primary noise metric used by the U.S. Army to describe small-arms noise is PK15(met).

The USEPA recommends that, to protect public health with an adequate margin of safety, exterior noise levels should not exceed 55 dB DNL and interior noise levels should not exceed 45 dB DNL in noise-sensitive locations (USEPA, 1974). The Federal Interagency Committee on Urban Noise (FICUN) took these recommendations into consideration when developing its recommendations on compatibility of land uses with noise (FICUN, 1980). These recommendations have been adopted, with minor modifications, by Department of Defense Instruction (DoDI) 4165.57.

Existing Conditions

Eglin AFB is an active base—thus aircraft, explosives, and small arms firing noise are typical noises. In the interstitial area, ambient noise levels are largely natural sounds from birds and wind punctuated by passing aircraft, bombs or munitions noise on nearby test areas, some on and off-road vehicle traffic within the interstitial areas.

3.3.5 Chemical Materials

Chemical materials encompass liquid, solid, or gaseous substances that are released to the environment as a result of mission activities. LZs located on Eglin AFB have a wide variety of uses and user groups, but chemical materials associated would mostly consist of petroleum-based fuels. Other sources of chemical materials may include munitions and pyrotechnic combustion by-products from items such as smokes and flares.

Release of these materials may potentially affect air quality, water quality, soils, and sediments. The environmental analysis of chemical materials describes the potentially adverse environmental impacts from testing and training activities associated with the LZs on Eglin AFB.

Hazardous Materials

According to the Resource Conservation and Recovery Act (RCRA), Section 6903(5), hazardous materials and waste are defined as substances that, because of “quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to increases in mortality or serious illnesses, or pose a substantial threat to human health or the environment”. Hazardous materials as

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referenced here pertain to mission-related hazardous chemicals or substances meeting the requirements found in 40 CFR 261.21.24, are regulated under the RCRA, and are guided by Air Force Instruction (AFI) 32-7042. The hazardous materials to be transported, stored, and used on-site consist of fuels, munitions, and pyrotechnics.

Under federal law, the transportation of hazardous materials is regulated in accordance with the Hazardous Materials Transportation Act, 49 USC 1801 et seq. For the transportation of hazardous materials, Florida has adopted federal regulations that implement the Hazardous Materials Transportation Act, found at 49 Code of Federal Regulations (CFR) 178.

State laws pertaining to hazardous materials management include the Florida Right-to-Know Act, Florida Statutes Title 17, Chapter 252, the Hazardous Waste section of the FDEP and the Florida Department of Transportation (FDOT) Motor Carrier Compliance Department that implements 49 CFR 178 under Florida statute annotated Title 29 Section 403.721.

The AAC Sup1 Plan 32-7086, Hazardous Materials Management, describes how Eglin complies with federal, state, Air Force and DoD laws and instructions. All Eglin AFB organizations and tenants are required to follow this plan.

Eglin AFB has implemented a Hazardous Waste Management Plan, AAC Instruction 32-7003, that identifies hazardous waste generation areas and addresses the proper packaging, labeling, storage, and handling of hazardous wastes. The plan also addresses record-keeping; spill contingency and response requirements; and education and training of appropriate personnel in the hazards, safe handling, and transportation of these materials (U.S. Air Force, 2006b). Procedures and responsibilities for responding to a hazardous waste spill or other incident are also described in the Eglin AFB Spill Prevention, Control, and Countermeasures (SPCC) Plan (U.S. Air Force, 2005b).

Debris

Debris includes the physical materials that are deposited on the surface of terrestrial or aquatic environments during mission activities. The potential impacts are primarily related to physical disturbances to people, wildlife, or other users of the Range, and chemical alterations that could result from the residual materials. Examples of debris deposited from activities in the interstitial area that may potentially result in environmental impacts include the following:

- Shell casings, canisters from signal smokes, flares, chutes from flares
- Unexploded ordnance (UXO) (primarily inert items)
- Litter and refuse from daily mission activities including troop movement

Primary users are responsible to remove and ensure recycling or proper disposal of any debris on a periodic basis.

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Figure 19, Abandoned vehicles on the north end of Rock Hill Airstrip

Environmental Restoration Program

The Environmental Restoration Program (ERP), formerly known as the Installation Restoration Program (IRP), is used by the Air Force to identify, characterize, and remediate past environmental contamination on Air Force installations. Although widely accepted at one time, the procedures followed for managing and disposing of wastes resulted in contamination of the environment. The ERP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites. Regulations affecting ERP management at Eglin integrate investigative and remedial protocols of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and RCRA processes, as well as state environmental compliance programs, primarily those found in the FAC 62-770, Petroleum Contamination Site Cleanup Criteria. Detailed information on all active and closed ERP sites can be found in the Eglin Air Force Base Environmental Restoration Program Sites Status Report (U.S. Air Force, 2007a).

Cleanup of contaminated property to safe levels is the first priority of the ERP at Eglin AFB; however, lack of feasible and/or cost-effective remedies for some site conditions necessitates the use of Land Use Controls (LUCs). LUCs are mechanisms that are primarily used to limit human activities at or near a contaminated site. In general, LUCs can be implemented at active installations where: 1) typical cleanup measures are not prudent or feasible; 2) the historical and future land use at a site as reflected in the installation's land use plans is non-residential and compatible with LUC concept; 3) long-term LUC

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management systems can be effectively maintained; 4) LUCs offer advantages; and 5) the potential liabilities are limited.

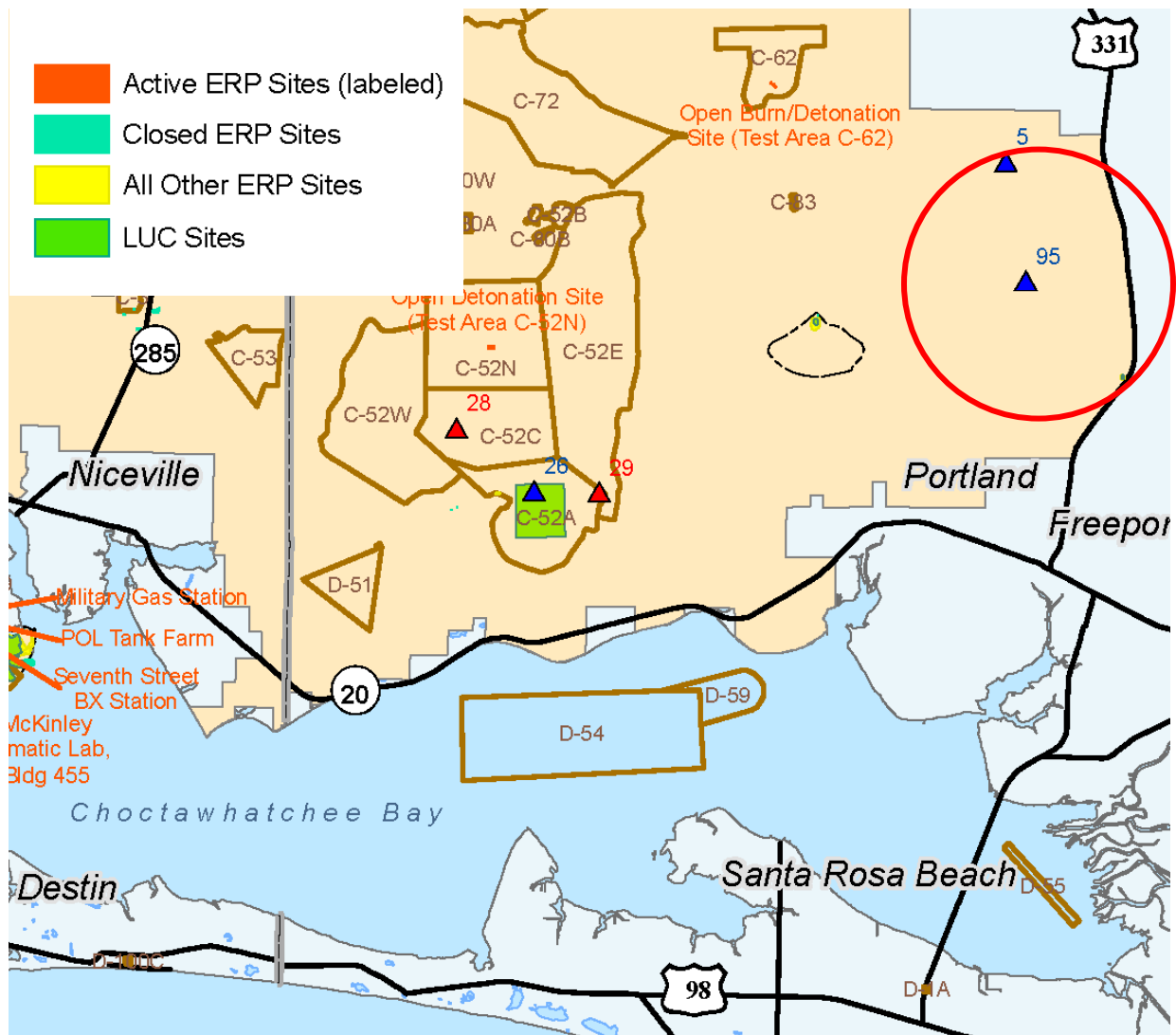


Figure 20, ERP sites on Eglin AFB

(Figure 20) Rock Hill (LZ 95) has no known LDP, disposal sites or known spills within 2 miles (red circle).

LUCs may be implemented alone or as components of, or enhancements to, active remediation sites. They permit limited use of property while ensuring the effectiveness of remedial action and the protection of human health and the environment over a long period of time. LUCs are designed to protect the public and the environment from residual hazardous substances during and after remediation. Only the ERP site located at LZ C-52A is subject to LUCs.

Legacy Debris Pits (LDPs) are areas where ordnance and explosive waste residues are present or buried in the water, soil, or sediment. Eglin AFB's Environmental Restoration Branch (96 CEG/CEVR) identifies

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and manages LDPs to monitor known and potential areas of concern regarding munitions. There are no LDP sites located at or within 500 feet of LZs.

3.3.6 Biological Resources

Biological resources include the plants and animals that inhabit the study areas and the habitats in which they reside.

Ecological Associations

The ecological associations that occur within the Eglin Reservation include the Sandhills, Wetland/Riparian, Flatwoods, Barrier Island, and Open Grassland/Shrubland associations.

Specific areas exist within Eglin AFB that is ecologically unique due to their high quality examples of natural communities or presence of rare species. These areas were identified by the Florida Natural Areas Inventory (FNAI) through a project funded by the DoD Legacy Resource Management Program. Termed “High Quality Natural Communities,” these areas are distinguished by the uniqueness of the community, ecological condition, species diversity, and presence of rare species. These high quality areas total 75,266 acres and cover approximately 16 percent of the installation.

FNAI also identified special habitats that support rare plants on Eglin called Significant Botanical Sites, as well as larger-scale landscapes containing complexes of rare species, which they named Outstanding Natural Areas (FNAI 1995, 1997). Large portions of these two areas overlap. Combined, these “Outstanding Natural Areas” and “Significant Botanical Sites” total 43,210 acres, or approximately 9 percent of the installation. These landscapes contain the highest quality examples of the natural communities on the installation, and, by extension, the highest quality examples of these natural communities globally.

The area of Rock Hill does not harbor any known FNAI or SBS sites.

The unique and diverse ecological associations at Eglin can be seen in the next table and map.

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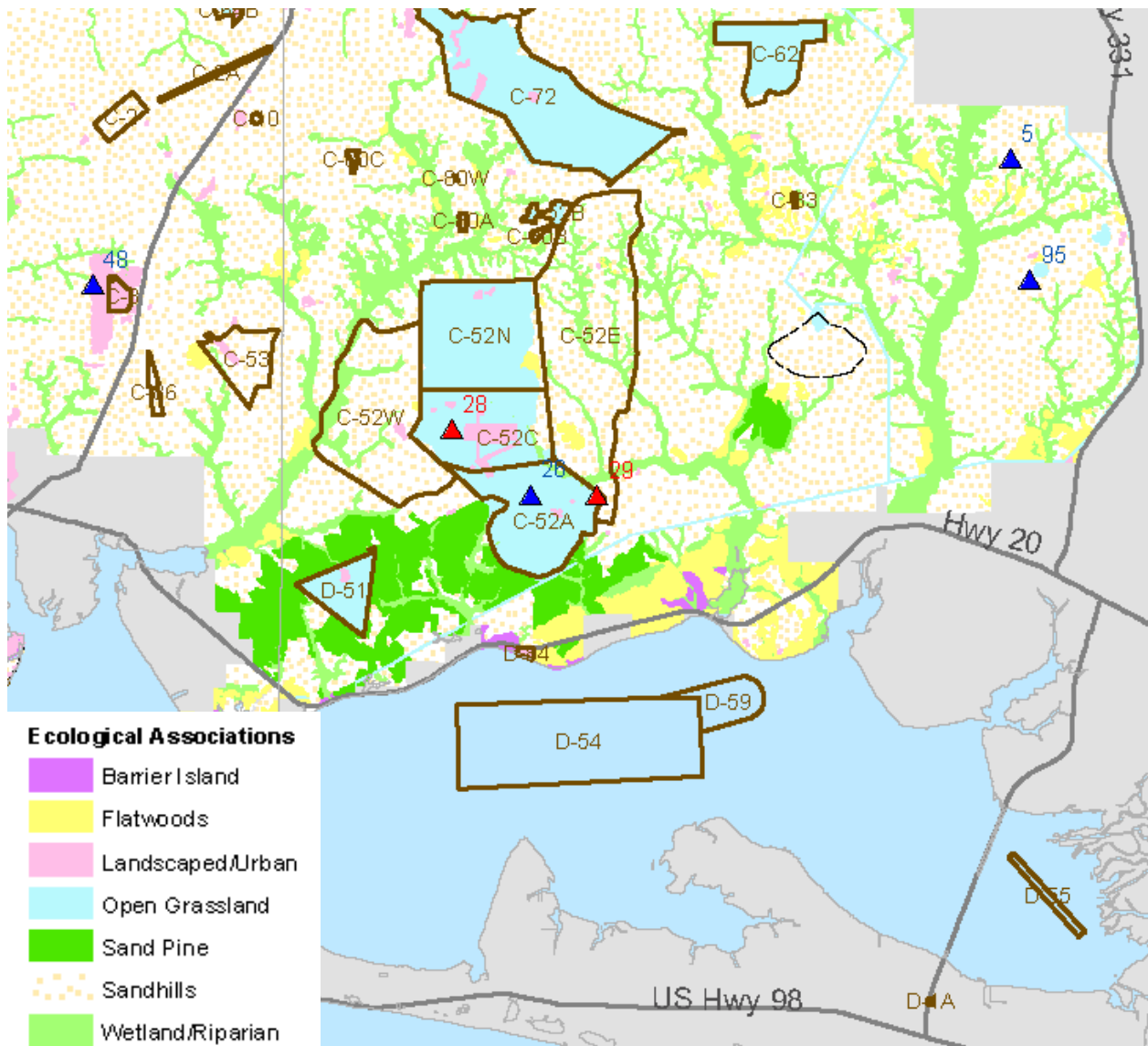


Figure 21, Ecological Associations found on Eglin AFB

Table 5, Typical Plant and Animal Species of Eglin AFB by Ecological Association

| Plants | | Animals | |
|---|------------------------|-------------------------|----------------------------|
| Common Name | Scientific Name | Common Name | Scientific Name |
| Sandhills Ecological Association | | | |
| Longleaf pine | <i>Pinus palustris</i> | Red-Cockaded Woodpecker | <i>Picoides borealis</i> |
| Turkey oak | <i>Quercus laevis</i> | Bobwhite quail | <i>Colinus virginianus</i> |
| Blackjack oak | <i>Q. marilandica</i> | Great horned owl | <i>Bubo virginianus</i> |
| Bluejack oak | <i>Q. incana</i> | Gopher tortoise | <i>Gopherus polyphemus</i> |

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| Plants | | Animals | |
|---|--------------------------------|-------------------------|------------------------------------|
| Common Name | Scientific Name | Common Name | Scientific Name |
| Wiregrass | <i>Aristida stricta</i> | Six-lined racerunner | <i>Cnemidophorus sexlineatus</i> |
| Saw palmetto | <i>Serena repens</i> | Diamondback rattlesnake | <i>Crotalus adamanteus</i> |
| Bracken fern | <i>Pteridium aquilinum</i> | Raccoon | <i>Procyon lotor</i> |
| Blueberry | <i>Vaccinium</i> spp. | Florida black bear | <i>Ursus americanus floridanus</i> |
| Yaupon | <i>Ilex vomitoria</i> | Fox squirrel | <i>Sciurus niger</i> |
| Gallberry | <i>Ilex glabra</i> | Least shrew | <i>Cryptotis parva</i> |
| Gopher apple | <i>Licania michauxii</i> | Cottontail rabbit | <i>Sylvilagus floridanus</i> |
| Sand blackberry | <i>Rubus cuneifolius</i> | Pocket gopher | <i>Geomys pinetus</i> |
| Pine-woods Bluestem | <i>Andropogon arctatus</i> | White-tailed deer | <i>Castor canadensis</i> |
| Longleaf pine | <i>Pinus palustris</i> | Red-Cockaded Woodpecker | <i>Picoides borealis</i> |
| Turkey oak | <i>Quercus laevis</i> | Bobwhite quail | <i>Colinus virginianus</i> |
| Wetland and Riparian Ecological Association (Freshwater) | | | |
| Cattail | <i>Typha domingensis</i> | Florida black bear | <i>Ursus americanus floridanus</i> |
| Phragmites | <i>Phragmites australis</i> | American alligator | <i>Alligator mississippiensis</i> |
| White cedar | <i>Chamaecyparis thyoides</i> | Pine barrens tree frog | <i>Hyla andersonii</i> |
| Swamp tupelo | <i>Nyssa biflora</i> | Five-lined skink | <i>Eumeces fasciatus</i> |
| Purple pitcher plant | <i>Sarracena purpurea</i> | Green anole | <i>Anolis carolinensis</i> |
| Swamp titi | <i>Cyrilla racemiflora</i> | Garter snake | <i>Thamnophis sirtalis</i> |
| Tulip poplar | <i>Liriodendron tulipifera</i> | Raccoon | <i>Procyon lotor</i> |
| Sweetbay magnolia | <i>Magnolia virginiana</i> | American beaver | <i>Castor canadensis</i> |
| Redbay | <i>Persea borbonia</i> | Little blue heron | <i>Egretta caerulea</i> |
| Flatwoods Ecological Association | | | |
| Longleaf pine | <i>Pinus palustris</i> | Wood duck | <i>Aix sponsa</i> |
| Runner oak | <i>Quercus pumila</i> | Red-winged blackbird | <i>Agelaius phoenicius</i> |
| Saw palmetto | <i>Serena repens</i> | Cottonmouth | <i>Agkistridon piscivorus</i> |
| Coastal plain St. Johnswort | <i>Hypericum brachyphyllum</i> | Florida black bear | <i>Ursus americanus floridanus</i> |
| Slash pine | <i>Pinus elliotii</i> | River otter | <i>Lutra canadensis</i> |
| Black titi | <i>Cliftonia monophylla</i> | Beaver | <i>Castor canadensis</i> |
| Pitcher plant | <i>Sarracenia</i> spp. | Gray fox | <i>Urocyon cinereoargenteus</i> |
| Open Grassland/Shrubland Ecological Association | | | |
| Switchgrass | <i>Panicum virgatum</i> | Red-shouldered hawk | <i>Buteo lineatus</i> |

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| Plants | | Animals | |
|------------------|-------------------------------|-------------------------------|--------------------------------|
| Common Name | Scientific Name | Common Name | Scientific Name |
| Broomsedge | <i>Andropogon virginicus</i> | Southeastern American kestrel | <i>Falco sparverius paulus</i> |
| Big bluestem | <i>Andropogon gerardii</i> | Florida burrowing owl | <i>Athene cunicularia</i> |
| Indian grass | <i>Sorghastrum</i> spp. | Flycatchers | <i>Tyrannidae</i> spp. |
| Purple lovegrass | <i>Eragrostis spectabilis</i> | Cotton mouse | <i>Peromyscus gossypinus</i> |
| Panic grass | <i>Dichanthelium</i> spp. | Slender glass lizard | <i>Ophisaurus attenuatus</i> |
| Forbs | <i>Ruderal</i> spp. | Gopher tortoise | <i>Gopherus polyphemus</i> |

Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act require, among other things, that the NMFS and regional Fishery Management Councils designate EFH for species included in a fishery management plan. EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Federal agencies that fund, permit, or carry out activities that may adversely affect EFH are required to consult with NMFS regarding potential impacts, and respond in writing to NMFS and Fishery Management Council recommendations. Adverse impacts are defined as impacts that reduce quality and/or quantity of EFH, and may include contamination, physical disruption, loss of prey, and reduction in species' fecundity. EFH present in the LZ areas includes emergent vegetation and submerged aquatic vegetation.

Outstanding Florida Waters

Waters listed as OFWs include surface waters in national parks, aquatic preserves, wildlife refuges, marine sanctuaries, wild and scenic rivers, state aquatic preserves, and waters in areas acquired through donation, trade, or purchase under the Environmental Endangered Lands (EEL) Bond Program; Conservation and Recreation Lands (CARL) Program, Land Acquisition Trust Fund (LATF) Program, and Save Our Coast (SOC) Program. Special Waters, also listed as OFWs, have ecological and recreational importance but are not protected (FDEP, 2007a). State-designated OFWs occurring within the study area include Fred Gannon Rocky Bayou State Park (state aquatic preserve), Point Washington (EEL, CARL, LATF, and SOC)/Eden State Garden (state park), and the Choctawhatchee River (state special water). Waters that are not already in a state or federal managed area, may be designated as "special water" OFWs if certain requirements are met including a public process of designation.

Aquatic Preserves

The 480-acre Rocky Bayou Aquatic Preserve (FDNR, 1991) is the smallest of the 42 aquatic preserves in Florida. It encompasses the northernmost end of Rocky Bayou on north Choctawhatchee Bay just east of Niceville. Rocky Creek, Turkey Creek, and several steephead streams originating on Eglin AFB provide direct or indirect freshwater input to this system. The area is used for recreational boating and fishing and is bounded by residential use on the north shore and state park use on the south shore. The aquatic plant communities found within the preserve include slope forests, salt marsh, and floodplain marshes.

Bottom-dwelling macroinvertebrates (e.g., worms, crustaceans) indicate the sediment and water quality of this system is unpolluted, unlike many of the other bayous on the Bay (FDNR, 1991). Many members

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of shellfish and finfish families are found in Rocky Bayou and nearby waters. The Gulf Sturgeon could occur in this aquatic preserve and in the larger rivers.

Listed Species

Air Force projects that may affect federally listed species, species proposed for federal listing and critical habitat for protected species are subject to Section 7 of the Endangered Species Act (ESA). Through the Integrated Natural Resources Management Plan (INRMP) (U.S. Air Force, 2007b), Eglin has developed an overall goal to continue to protect and maintain populations of native threatened and endangered plant and animal species within the guidelines of ecosystem management. Eglin's Natural Resources Section (NRS) (96 CEG/CEVSN) protects state-listed species through habitat management, specifically through the management of habitats identified as conservation targets by The Nature Conservancy. By addressing the needs of conservation targets, which are sensitive, essential habitats, as well as cornerstone species, Eglin's NRS indirectly supports the management of other species and habitat, including state-listed species.

Sensitive species are those species protected under federal or state law, to include migratory birds (which are protected under the Migratory Bird Treaty Act [16 USC 703–712; 1997-Supp]) and threatened and endangered species (protected under ESA). An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is any species that is likely to become endangered in the future throughout all or a significant portion of its range due to loss of habitat, anthropogenic effects, or other causes. Federal candidate species and all state-listed species are those that should be given consideration during planning of projects, but have no protection under the Endangered Species Act

Table 6, Sensitive Species Found on Eglin AFB, FL

| Common Name | Scientific Name | State Status | Federal Status | Ecological Association |
|-----------------------------------|---------------------------------------|--------------|----------------|------------------------|
| Animals | | | | |
| Alligator snapping turtle | <i>Macrolemys temmincki</i> | SSC | -- | SW, FW |
| American alligator | <i>Alligator mississippiensis</i> | SSC | FT (S/A) | SW, FW |
| Bald eagle | <i>Haliaeetus leucocephalus</i> | ST | MBTA | SH, SW, FW, SP, GS |
| Gopher frog | <i>Rana capito</i> | SSC | -- | SH, SP, GS |
| Eastern indigo snake | <i>Drymarchon corais couperi</i> | ST | FT | SH, SW, FW, GS |
| Reticulated flatwoods salamander* | <i>Ambystoma bishopi</i> | SSC | Proposed FE | SW |
| Florida black bear | <i>Ursus americanus floridanus</i> | ST | -- | SH, SW, FW |
| Florida bog frog | <i>Rana okaloosae</i> | SSC | -- | SW, FW |
| Florida burrowing owl | <i>Athene cunicularia floridana</i> | SSC | MBTA | GS |
| Florida pine snake | <i>Pituophis melanoleucus mugitus</i> | SSC | -- | SH, SP |
| Gopher tortoise | <i>Gopherus polyphemus</i> | ST | -- | SH, SP, GS |
| Gulf sturgeon | <i>Acipenser oxyrinchus desotoi</i> | SSC | FT | SW |

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| Common Name | Scientific Name | State Status | Federal Status | Ecological Association |
|-------------------------------|--|--------------|----------------|------------------------|
| Okaloosa darter | <i>Etheostoma okaloosae</i> | SE | FE | SH |
| Pine barrens tree frog | <i>Hyla andersonii</i> | SSC | -- | SW, FW |
| Red-Cockaded Woodpecker | <i>Picoides borealis</i> | ST | FE, MBTA | SH |
| Southeastern American kestrel | <i>Falco sparverius paulus</i> | ST | MBTA | SP, GS |
| Bachman's sparrow | <i>Aimophila aestivalis</i> | --- | FC, MBTA | |
| Plants | | | | |
| Ashe's magnolia | <i>Magnolia ashei</i> | SE | -- | SH |
| Baltzell's sedge | <i>Carex baltzellii</i> | ST | -- | SH, FW |
| Bog Buttons | <i>Lachnocaulon digynum</i> | ST | -- | SW, FW |
| Harper's yellow-eyed grass | <i>Xyris scabrifolia</i> | ST | -- | SW |
| Mountain laurel | <i>Kalmia latifolia</i> | ST | -- | SH |
| Naked-stemmed panicgrass | <i>Panicum nudicaule</i> | ST | -- | SH, FW |
| Orange azalea | <i>Rhododendron austrinum</i> | SE | -- | SH |
| Panhandle lily | <i>Lilium iridollae</i> | SE | -- | FW |
| Pineland hoary pea | <i>Tephrosia mohrii</i> | ST | -- | SH |
| Pineland wild indigo | <i>Baptisia calycosa</i> var. <i>villosa</i> | ST | -- | SH |
| Pyramid magnolia | <i>Magnolia pyramidata</i> | SE | -- | SH |
| Silky camellia | <i>Stewartia malacodendron</i> | SE | -- | SH |
| Spoon-leaved sundew | <i>Drosera intermedia</i> | ST | -- | SW, FW |
| Sweet pitcher plant | <i>Sarracenia rubra</i> | ST | -- | SW, FW |
| West's flax | <i>Linum westii</i> | SE | -- | SW, FW |
| White-topped pitcher plant | <i>Sarracenia leucophylla</i> | SE | -- | SE, FW |
| Yellow fringeless orchid | <i>Platanthera integra</i> | SE | -- | FW |

Sources: Animals (USFWS et al., 2003); Plants (FNAI, 2002; U.S. Air Force, 1997a).

ST-state threatened

SE-state endangered

SSC-state species of special concern

FT-federally threatened

FE-federally endangered

FC-federal candidate

FT(S/A) -federally threatened due to similarity of appearance

MBTA = protected under the Migratory Bird Treaty Act

--Not Listed

* -The reticulated flatwoods salamander (*Ambystoma bishopi*) has been recently designated by the USFWS as the species known to occur on Eglin AFB. It is currently undergoing final review by the USFWS to be designated as federally endangered. The frosted flatwoods salamander (*Ambystoma cingulatum*) was the species previously thought to inhabit Eglin AFB and is federally threatened.

SH-Sandhills Ecological Association

SW-Swamp Ecological Association

FW-Flatwoods Ecological Association

SP-Sandpine Ecological Association

GS-Open/Grasslands Ecological Association

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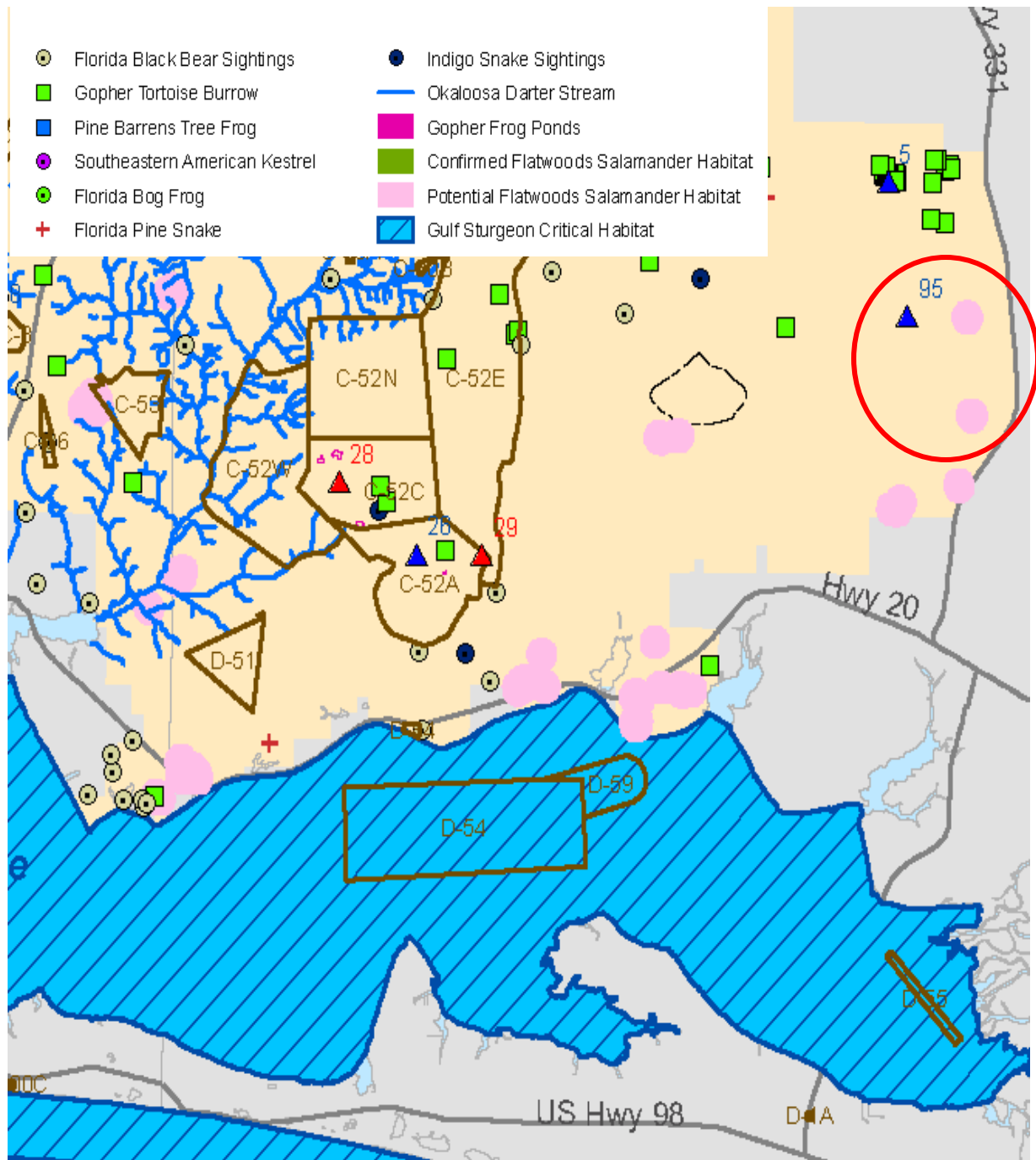


Figure 22, Sensitive species found on Rock Hill, Eglin AFB FL

Invasive nonnative species

Invasive nonnative species (INS) include plants, animals, insects, diseases and other organisms that are not native to an ecosystem and that threaten the natural biodiversity and functioning of an ecosystem. The introduction and spread of nonnative invasive species may also create significant negative issues for military training or for other anthropogenic land uses. Once established, these species reduce biological

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diversity and disrupt the natural integrity and function of native ecosystems by altering habitat, depredating native species, or out-competing native species.

3.3.7 Safety / Restricted Access

Unexploded Ordnance Management

UXO is defined as any munitions device containing explosive material (i.e., live) that did not detonate upon impact with the surface but still has the potential to detonate. UXO is a potential problem across much of the Eglin Range Complex as a result of past mission activities. Eglin AFB has been testing munitions for over 60 years. During its long history, a vast number of different munitions items have been expended throughout the Range as part of routine training and special testing activities. While UXO is an unintended but unavoidable consequence of any operation involving energetic material, only recently has the Air Force published standards for munitions residue maintenance, remediation, and documentation.

Air Armament Center Directorate of Safety office has conducted an archive search in order to document the locations of formerly used ranges but has yet to conduct any base-wide assessment of UXO contamination suitable to support an analysis of risk to training units. Previous informal analyses have centered on identifying areas with low enough risk to allow public recreation or to outgrant nonexcess real property. Currently, the Air Armament Center Directorate of Safety office handles requests on a case-by-case basis and controls the risk by limiting the type, location, or frequency of the requested action based on an informal risk assessment using local historical knowledge, the U.S. Army Corps of Engineers Archive Search Report, and the Eglin Reservation Explosives Contamination study from July 1976.

Some areas of Eglin AFB have been classified as clean by Air Armament Center Directorate of Safety office and do not have access restrictions. These areas either have never been used for munitions and/or the near surface has been checked for the presence of UXO. However, much of the Range is considered potentially contaminated with UXO that may have resulted from historical activities (U.S. Air Force, 1998).

Restricted Access

Restricted access pertains to the temporary closure of areas on Eglin AFB because of mission activities. The purpose of restricting access to the public during these times is to ensure their safety while maintaining mission integrity. Receptors potentially impacted would include the military and the public desiring to use recreational areas. Guidance for restricted access is utilized to coordinate public and military use of land within the Eglin AFB Range. Range areas in use are closed to all forms of public recreation. Areas permanently closed to the public are shown in Figure 20. Military missions conducted in the interstitial area may require certain areas to be closed to the public for various periods of time. Recreational access information is available on a daily basis by calling the Base Information Line at (850) 883-1191 (U.S. Air Force, 2003a)3.11

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3.3.8 Land Use

Land use generally refers to human management and use of land. In Eglin AFB, the current land uses consist mainly of military and recreational use. Land use also includes natural resources management, which is discussed in detail in the Integrated Natural Resources Management Plan (U.S. Air Force, 2006).

Land Use Regulatory and Management Overview

This section discusses the regulations, policies, and management protocols in place at Eglin AFB for range safety that impact LZ use. The primary regulations that establish relevant safety policy and define requirements and procedures for conducting tests on Eglin AFB and areas under its jurisdiction are in AAC Instruction 91-201, Test Safety Review Process. The AAC Range Safety Office (AAC/SE) and supporting organizations implement this guidance. The Test Safety Review Process implements the Operational Risk Management (ORM) process, as specified in AFI 90-901 for all AAC test programs, and reflects the practical application of ORM as outlined in Air Force Pamphlet (AFPAM) 90-902, ORM Guidelines and Tools. The steps in the ORM process, as they relate to the Test Safety Review Process are (U.S. Air Force, 2000):

Identify the hazards. Personnel involved with the test or activity act as a team to identify all potential hazards.

Assess the potential risk. Assess the probability and severity of loss from exposure to the identified hazard.

Analyze risk control measures. Investigate specific strategies and tools that reduce, mitigate, or eliminate the risk.

Make control decisions. Approve the best risk control or combination of controls based on the analysis of overall costs and benefits.

Implement risk controls. Once procedures to minimize identified hazards are determined and approved at the appropriate level, those procedures are implemented during the test.

Supervise and review. Continue the ORM process throughout the accomplishment of every test program.

This instruction affects all test operations that are conducted under a 46th Test Wing Test Directive. It includes ground training activities involving 96 CEG personnel, aircraft, equipment, or airspace. It applies to system program managers, program engineers, test engineers, range safety engineers, and aircrews responsible for incorporating safety planning and review into the conduct of test and training programs. Safety procedures are implemented through the individual organization, based on its specific training protocols/guidance.

A number of standard safety procedures exist to ensure limited public access to affected training areas during test implementation. These procedures require every practical effort to keep the designated training areas clear of all nonparticipating persons and vehicles.

Large portions of Eglin AFB are closed to public use, which facilitates range clearance operations. Depending on the type of training being conducted, contingency personnel may stand by in case of emergencies (U.S. Air Force, 2003).

In addition to noise attenuation and safety buffers, the interstitial areas of the Eglin Reservation play an important role in supporting many test and training missions by providing land areas with a wide variety of vegetative ground cover. Maintaining this mission support capability is one of the roles played by the

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Natural Resources Branch (Jackson Guard) in concert with the 46th Test Wing, through the Integrated Natural Resources Management Plan.

Military Use

The interstitial areas of Eglin AFB are mainly used for training activities. At times, these activities can overlap with other land uses, including recreation. Training activities are conducted by operational military units (proficiency training) and by established schools (initial training). Training activities occurring in the interstitial area include combat survival training, assault operations, parachute drops, air-to-ground tactical training, major force-on-force and force employment exercises.

The western portion of the base supports training activities such as jungle, swamp, tank, water-related operations, emergency readiness, pre-flight survival, and Special Forces training sessions. The northern portion of the base supports the air-ground operations school, survival classes, weekend training encampments, extended exercises, and Special Forces training sessions. Bivouac areas near Duke Field and Test Area B-4 support thousands of troops for relatively brief periods. These can include command, control, and communications training; special operations; and joint operations. Eastern areas of the base support rescue, recovery, Special Forces training, survival classes, extended exercises, weekend training, and emergency readiness (U.S. Air Force, 2003).

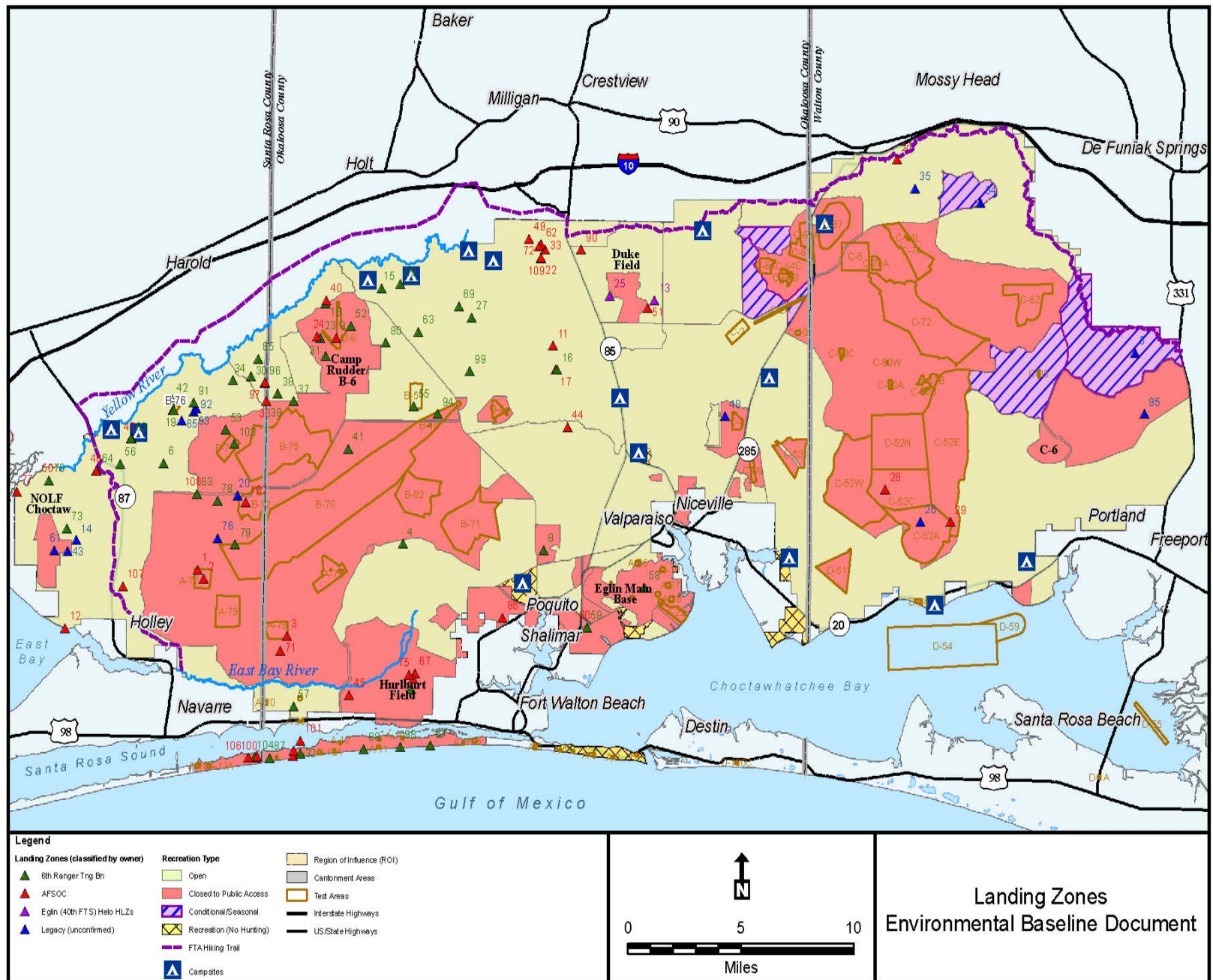
The interstitial area may also be used for missions that cannot be wholly accommodated within the footprints of individual test areas or may serve as a safety buffer for certain activities on established test areas. The primary function of the safety buffer land use is to restrict incompatible activities during testing operations and to support test and evaluation activities on an as-needed basis. Test area weapon safety footprints may restrict the amount and type of activities during test and evaluation on other land areas in the interstitial area. The particular safety footprint size depends on the type of test or training being conducted and is addressed in separate documents.

Recreational Use

There are various public recreational activities that take place on Eglin AFB. Approximately 272,000 acres of land are open to the general public for outdoor recreation regardless of military affiliation (U.S. Air Force, 2007a). Public recreation on Eglin is permitted during daylight hours only, with the exception of approved campsites after sunset. Outdoor activities include hunting, fishing, hiking, and camping, the most popular being hunting and fishing.

There are 15 management units, each with its own regulations associated with seasons, mission activities, and access to the public and DoD-affiliated persons. All persons that engage in outdoor recreational activities are required to adhere to applicable Eglin AFB, federal, and state laws, rules, and regulations. General regulations are in place that address prohibited actions; for example, disturbing or removing any government property from the Eglin Reservation is prohibited. Entry into both “closed” areas and “seasonally closed” areas is prohibited unless the Commander of Eglin AFB has granted special permission. Areas designated as “open” are available for all types of outdoor recreation with the exception of hunting. Annual rules, regulations, permits and maps for recreational activities can be obtained from Eglin’s NRS at Eglin AFB (U.S. Air Force, 2007a).

Figure 23, Areas restricted to public access on Eglin AFB



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Recreational, hunting, and fishing permits are required for anyone 16 years or older entering Eglin AFB. Any person under the age of 16 is required to purchase a permit only if they are hunting. Those persons hunting, fishing, or in possession of equipment used for these activities must have applicable state and federal licenses, stamps, and permits (U.S. Air Force, 2007a). Table 10 shows the number of recreation, hunting, fishing, forest products, and camping permits that have been issued for Eglin AFB between FY2005 and FY2007.

Table 7, Recreational Permits Issued for Eglin AFB Between FY2005 and FY2007

| Type of Permit | 2005 | 2006 | 2007 |
|----------------|--------|--------|--------|
| Hunting | 4,997 | 5,309 | 5,466 |
| Fishing | 3,629 | 4,317 | 4,305 |
| Recreation | 5,615 | 5,904 | 5,883 |
| Forest Product | 268 | 400 | 553 |
| Camping* | 625 | 592 | 612 |
| Total | 15,134 | 16,522 | 16,819 |
| Grand Total | 48,475 | | |

Source: Johnson, 2007

*Numbers do not include permits from using the Florida National Scenic Trail/Camping Souvenir.

Hunting

Hunting is allowed in designated areas during open hunting season. Trapping of certain species is also legal, but the use or possession of steel traps is prohibited. The hunting or trapping of threatened and endangered species is prohibited. There are 180,000 acres open to hunting with dogs and 90,000 acres open to still hunting, where hunting with dogs is not allowed (U.S. Air Force, 2000). Three hunting seasons (archery, general gun, and late primitive weapon) are established on Eglin AFB.

Table 8, Hunting Seasons on Eglin AFB in FY2008

| Activity | Season |
|--|---------------------------------------|
| Hunting | |
| Spring turkey | 15 Mar-20 Apr |
| Early Small Game* | 12 Nov-24 Feb *MU 6 |
| Late Small Game | 2-18 Jan |
| Varmint/Predator* | 15 May-15 Jun *MU 12 only |
| Trapping | 1 Dec-1 Mar |
| Archery | 13 Oct-11 Nov |
| Muzzle loading gun | 16-18 Nov |
| General gun | 22-25 Nov, 8 Dec-1 Jan, 19 Jan-27 Feb |
| Late Primitive Weapon | 14-24 Feb |
| Forest products | Each management unit differs |
| Other activities (i.e., fishing, berry picking, etc.) | No established seasons in open areas |

Source: U.S. Air Force, 2007a

MU = Management Unit

*Seasons may vary according to each individual management unit.

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Fishing

Fishing is allowed in all ponds and streams within open areas; there are approximately 16 bodies of water totaling 187 acres that may be used, including Anderson, Atwell, Brandt, Brown, Buck, College, Crain, Duck, Indigo, Jack, Jr. Walton, Kepnar, Upper Memorial, Timberlake, Weekly, and Hurlburt Lake ponds. Any persons fishing must have both an Eglin Fishing Permit and a Florida State Fishing License. The use of outboard motors is prohibited on all ponds. Boats with outboard motors may be launched, but the motor may not be started at any time (U.S. Air Force, 2007a).

Camping

An Eglin Camping Permit, which notes a specific campsite, is required by any persons proposing to camp on the Reservation. Camping is permitted in 15 specific camping areas: Anderson Pond, Basin Bayou, Blue Springs, Buck Pond, Carr Landing, Duck Pond, Gin Hole Landing, Indigo Pond, Jr. Walton Pond, Kepnar Pond, Metts Bluff, Rocky Creek, Speck Pond, Timberlake Pond, Weaver Road. Camping is permitted year-round; however, it not permitted for more than five consecutive days at a designated campsite unless special permission is granted (U.S. Air Force, 2007a).

Hiking

Hiking, bicycling, walking, picnicking, pleasure driving, berry picking, boating, horseback riding, swimming, bird watching, and collection of forest products are other activities that regularly occur on the Eglin Reservation. All of these activities can be performed with an Eglin Recreation Permit, with the exception of collecting forest products such as deer moss, palmetto, pine straw, and wood mulch. These activities require an Eglin Forest Products Permit. The cutting of live water oak, laurel oak, southern red oak, live oak, and standing pine trees is prohibited. The cutting of scrub oak (turkey oak, sand live oak, sand post oak, and blue jack oak) is permitted. The taking of one Christmas tree (sand pine) per family is allowed each year with a Christmas Tree Permit. No threatened or endangered plant species can be removed from the Reservation (U.S. Air Force, 2007a).

Future Land Use

Future land use would remain consistent with current land uses. Military and recreational use would remain the primary land uses. Increases or decreases in recreational use would depend on future mission requirements of the military.

3.3.9 Socioeconomics

This section discusses the socioeconomic resources that have the potential to be impacted by activities occurring on Eglin AFB. The primary issues include environmental justice concern areas, as well as areas containing a high concentration of children.

Environmental Justice

In 1994, EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (Environmental Justice), was issued to focus the attention of federal agencies on human health and environmental conditions in minority populations and low-income populations. The EO was established to ensure that disproportionately high and adverse human health or environmental effects

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of federal actions on these populations are identified and addressed. The environmental justice analysis addresses the characteristics of race, ethnicity, and poverty status of populations residing in areas potentially affected by the proposed federal action. The purpose of this analysis is to identify disproportionate human health and safety and environmental impacts on minorities and low-income communities and to identify appropriate alternatives.

The DoD Strategy on Environmental Justice was adopted 24 March 1995. It includes a summary report, strategy on environmental justice, implementation plan and states that DoD will use NEPA as the primary mechanism to implement the provisions of EO 12898. AFI 32-7061, 2003, which incorporates by reference 32 CFR Part 989, The Environmental Impact Analysis Process, as the controlling document for the Air Force EIAP, addresses the need for consideration of environmental justice issues in the impact analysis process.

For the purpose of this analysis, minority and low-income populations are defined as follows:

Minority Populations

All persons identified by the Census of Population and Housing to be of Hispanic or Latino origin, regardless of race, plus non-Hispanic persons who are Black or African American, American Indian and Alaskan Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other (i.e., non-white) Race or Two or More Races. For purposes of the analysis, the minority population is calculated by subtracting the number of persons who are White but not Hispanic, from the total population.

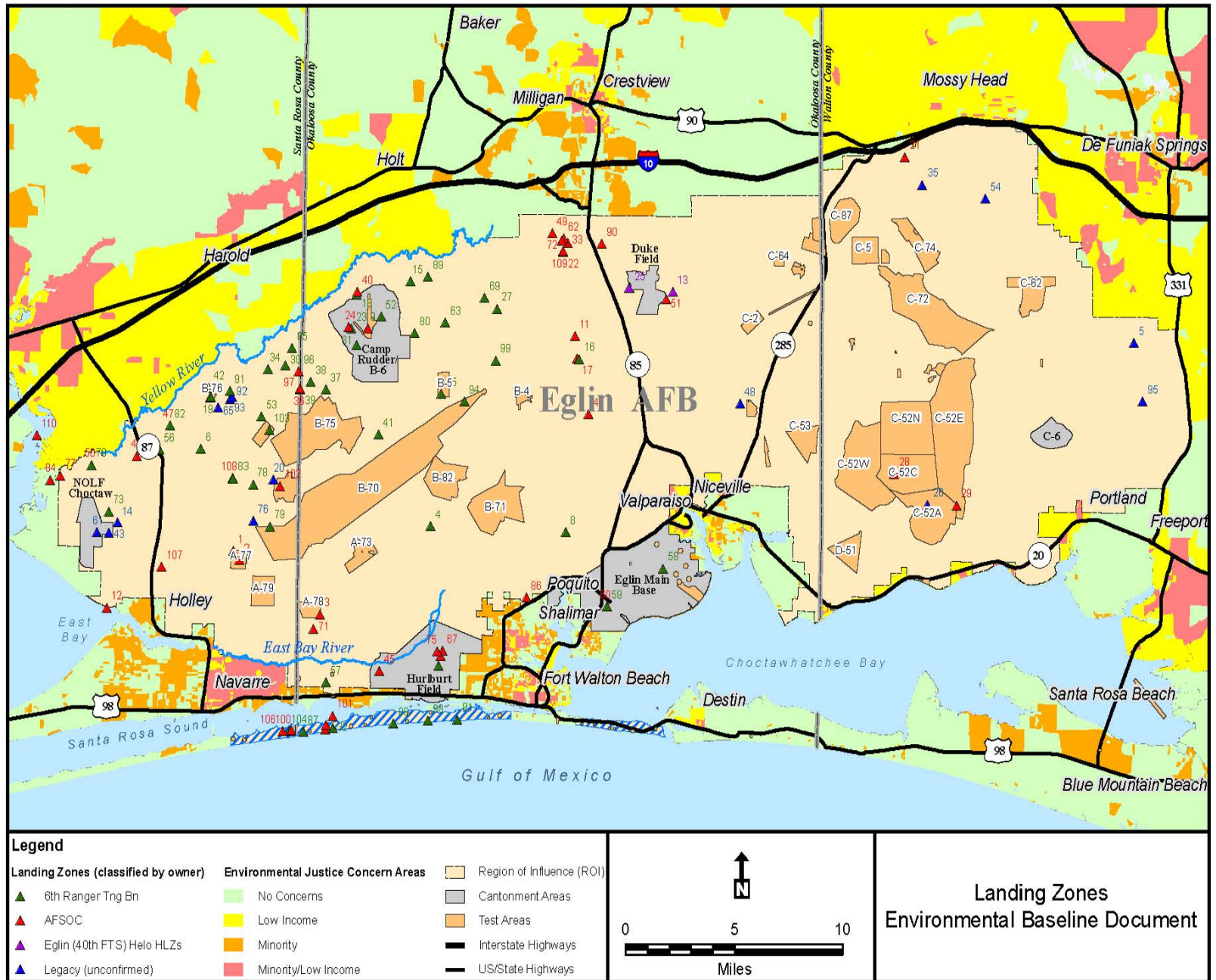
Low-Income Populations

All persons that fall within the statistical poverty thresholds published by the U.S. Census Bureau in the Current Population Survey are considered to be low-income. For the purposes of this analysis, low-income populations are defined as persons living below the poverty level (\$16,895 for a family of four with two children, adjusted based on household size and number of children), as reported in the 2000 Census. The 2000 Census asked people about their income in the previous calendar year. Therefore, poverty estimates reported in the 2000 Census compare family income in 1999 with the corresponding 1999 poverty thresholds. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being below the poverty level. The percentage of low-income persons is calculated as the percentage of all persons for whom the Census Bureau determines poverty status, which is generally a slightly lower number than the total population because it excludes institutionalized persons, persons in military group quarters and college dormitories, and unrelated individuals under 15 years old.

Risks to Children

In 1997, EO 13045, Protection of Children from Environmental Health Risks and Safety Risks (Protection of Children), was issued to identify and address issues that affect the protection of children. The EO states that “environmental health risks and safety risks mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to).” Higher concentrations of children occur in schools, community childcare facilities, and hospitals than in residential areas.

Figure 24, Communities with High Minority and Low Income Populations as Compared to County



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3.6 Cultural Resources

Cultural resources consist of prehistoric and historic sites, structures, artifacts, and any other physical or traditional evidence of human activity considered relevant to a particular culture or community for scientific, traditional, religious, or other reasons (32 CFR Part 800 [I][1]).

Regulatory Requirements

As a federal agency, the law requires Eglin to consider the effects of its actions on historic properties. Mandating regulations include the Antiquities Act of 1906, NEPA of 1969, National Historic Preservation Act (NHPA) of 1966 as amended, the Archaeological Resources Protection Act of 1979 (ARPA), and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA). The act that most directly relates to Eglin's cultural resources management is the NHPA (Federal Register, 1988; U.S. Air Force, 2004).

Under NHPA, the Air Force is required to consider the effects of its undertakings on historic properties listed or eligible for listing in the National Register of Historic Places (NRHP), and to consult with interested parties regarding potential impacts. The NRHP, authorized under the NHPA of 1966, is the formal listing of cultural resources considered worthy of preservation in the United States. Properties listed in the NRHP include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture.

Eglin AFB contains approximately 2,300 identified archaeological sites which date from 8000 B.C. to the Cold War era. Additionally, the Air Force Environmental Impact Analysis Process surveys areas that mission activities may potentially impact. To that end, Eglin has developed a probability model for historic properties to identify and minimize potential impacts. By defining zones of archaeological or historic high probability, project planners and managers are able to make decisions about whether to relocate a proposed activity from an area of high probability to one of low probability, therefore avoiding costly adjustments later in the project.

As part of Eglin's compliance requirements under Section 110 of the NHPA to inventory all of its cultural resources, Eglin systematically surveys cultural high and low probability areas. Sensitive areas include previously un-surveyed property that Eglin determines (due to physical attributes) to have a high probability for the occurrence of cultural resources. Additionally, Eglin considers any historic properties listed as potentially eligible or eligible to the NRHP significant until additional investigation determines ineligibility of the resource. Of 463,128 acres on Eglin AFB, 195,692 acres have been surveyed, while 134,307 acres require additional survey. The remaining 133,129 acres are either disturbed or considered low probability for cultural resources and require no additional survey.

Rock Hill specific

Recent Eglin CR reconnaissance visits and professional field surveys have revealed a number of historic and prehistoric cultural resources in the area of the Rock Hill Landing Zone. The immediate vicinity of the landing strip has been found to be rich with structures related to Cold War era training operations. These include military target vehicles dating to the 1950's, discarded missile boosters, and abandoned aircraft maintenance equipment. In addition, several archaeological sites, related to an early 20th Century homestead and its associated land management, have been located nearby. Eglin's CR division

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has documentary evidence of multiple land claims to the area dating to as early as 1904. There are also several prehistoric artifact scatters in the vicinity that are potentially eligible for the National Register of Historic Places.

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4.0 Environmental Consequences

Consequences are the direct result of an action or changing the tempo of action. Cumulative effects of actions and stopping actions must also be considered. The bounds of the consequence must also be examined. Section 3.2 examined bounds and should be referred to at this time.

4.1 Chapter Organization

This chapter examines the potential impacts of Rock Hill assault airstrip mission activities on the environment. Alternatives A-D are not covered as the impact of the operation of the 46 RANMS is already felt by these sites, any discussion would be of current conditions not consequences of future actions already covered in chapter 3. Therefore the existing fields will not be examined. Emphasis will be on renewed assault airstrip operations at Rock Hill. Where other airstrips and LZs are mentioned it is for comparison and clarity.

4.2 Identified Resources

For the environmental analyses performed for this section, military activities were examined under each separate identified resource area that they may impact. The resource areas evaluated are:

- Soils
- Water resources
- Air quality
- Noise
- Chemical materials
- Biological resources
- Safety/restricted access
- Land Use
- Socioeconomics
- Cultural resources

The analysis sections in Chapter 4 quantify the issues impacting the resource areas. Analyses developed mission activity scenarios to establish a measurement of impacts. These then formulated assumptions, based on a combination of established scientific methodologies and professional judgments, to reflect the behavior, condition, and/or interactions of mission activities and environmental factors. The analyses then measured mission impacts to environmental factors based on a comparison to available threshold criteria presented in environmental regulations and scientific literature in order to exhibit the extent of impacts. In some cases, criteria for evaluating potential impacts were unavailable. In such cases, subject matter experts used literature about impacts related to the issue to conduct their analyses.

Management requirements are operating procedures that Eglin implements to lessen potential adverse environmental impacts. Management requirements for an assault airstrip mission and maintenance activities are included as part of this section.

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4.3 Alternatives A-D: Environmental Consequences

Alternative A

Auxiliary Field 1, Auxiliary Field 6 LZ, and LZ East under the no action alternative are to continue to be utilized as they currently are. Therefore no new consequence is foreseen. Data on current conditions is given in chapter 3 and is expected to remain static under the no action alternative. Alternative A is therefore not examined further.

Alternative B

Auxiliary Field 1 primary use by 46 RANMS/DOP would disrupt ongoing wartime essential operations. While operations at the current level could be scheduled and sustained, the continued use at the current level would have mission impacts on incoming BRAC missions as covered in the 2005 BRAC EIS. The designation of Auxiliary Field 1 as a primary field of operation would therefore have no practical impact as the other fields would still be required to meet mission needs.

Alternative C

Auxiliary Field 6 LZ as a primary field is not going to happen as the airstrip is closed and being utilized for wartime essential training. The entire paved airfield is problematic to use as a primary airstrip due to other activities continuing to increase in the area. Scheduled field use will continue on an as needed and as available basis. The field is not open to being appointed as the primary 46 RANMS/DOP field. No further detailed study of this field is required.

Alternative D

LZ East has been heavily re-constructed FY 10 as part of BRAC driven realignments. The primary users have invested heavily in this strip. While the LZ is technically under the control of the 46 Test Wing for scheduling, the primary uses will fall to wartime training activities of AFSOC and 7 SFS. Scheduled field use will continue on an as needed and as available basis. The field is not open to being appointed as the primary 46 RANMS/DOP field. No further detailed study of this field is required.

4.4 Alternative E: Rock Hill Environmental Consequences

The development or re-development of an airstrip is governed by airfield rules codified under UFC guidance. The safe operation of an airfield of any type will require the removal of obstacles and obstructions that would impede safe landing and takeoff. The rules are different for general use airports than mission specific and aircraft specific airfields. As this is a very specific need for cargo aircraft that do not need pavement, the surfacing requirements are much less than that for like sized commercial jets. The aircraft of primary concern is the very nimble C-130. The glide slope clearance requirement is minimal. The power of the engines is likewise impressive, reducing the need for a long runway. The C-130 has operated successfully from an aircraft carrier requiring no landing or take-off assistance. As Rock Hill may be required to accommodate C-17 aircraft, an additional margin is required. The list of required actions would be as follows:

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The redevelopment of Rock Hill LZ would require the removal of trees and the maintaining of a clear zone at each end of the runway 1750' from the end of the runway (35:1 clearance plane for 50' tall trees).

150'x3500' would be maintained as unimproved airfield surface. A total of 350'x 4000' would be required to be cleared of all brush and trees and maintained as a the grass margin surrounding the airstrip.

There is the potential for minor oil and fuel spills from aircraft (Jet-A/JP-8/diesel), vehicles and generators (gasoline/diesel/antifreeze/oil/grease).

Cargo airdrop, personnel airdrop, war-games, and other OVC activity may contribute trash and debris (food/packaging/spent rifle casings/wood).

The clear zones would need to be maintained in accordance with the *Eglin Vegetative Maintenance Plan 2009* requiring mowing/tree removal or trimming/burning/and spraying to maintain the clear area for landing and the drop zone.

The current road system (RR 307/RR 309) is in dismal condition and would require straightening, widening to 34 feet, and compacting/graveling/stabilizing.

A gate would be required near RR 205 and a gated fence with a perimeter road would be required around the airstrip. Figure 27 utilizes a 300' buffer around the actual airstrip as an estimated placeholder for calculating environmental consequences. Actual fencing may be considerably smaller in footprint.

The perimeter road is to be single lane and may be used in part to re-locate sections of RR 307. Should the fence line not overlap RR 307, the actual perimeter road may be located on the inside of the fence line and considerably smaller than indicated in figure 24.

The projected areas excluding the runway and road includes aircraft turning pads at each end of the runway, an aircraft parking apron, and an adjacent temporary support (generator/vehicle/loading) parking and maneuver area. The parking area and turning pad may be combined at the north end or separate areas.

Rock Hill as managed by 46 RANMS customer activities would be for short interval use. No equipment would be stored on-site, however prepositioning of equipment may be necessary one to five work days in advance. Any such equipment is to be removed as soon as possible not remaining on-site for more than 30 days without filling an action specific AF Form 813 Request for Environmental Analysis and AF FORM 332 Base Civil Engineer Work Request. At this time no request for any on-site utilities or services is anticipated (trash pickup, port-a-potty or other service).

No structures, temporary or permanent are required for the type of actions anticipated. No temporary or permanent activity is anticipated. Work on-site is to follow the historic pattern of being completed within one normal work-shift to include set-up and removal of all test and support equipment.

During hunting season leaving any unattended equipment on-site is highly discouraged. To monitor equipments safety, longer term (more than one shift) occupation may be needed during hunting season.

Recreational hunting would only be restricted on an as needed basis. Hunting would help control the deer population in an area where impacts with aircraft takeoff/landing is a concern. Hunters and other recreational visitors would be discouraged from entering the immediate area of the airfield by a perimeter fence and warning signs. Hunting within the cleared landing zone may be restricted by permit.

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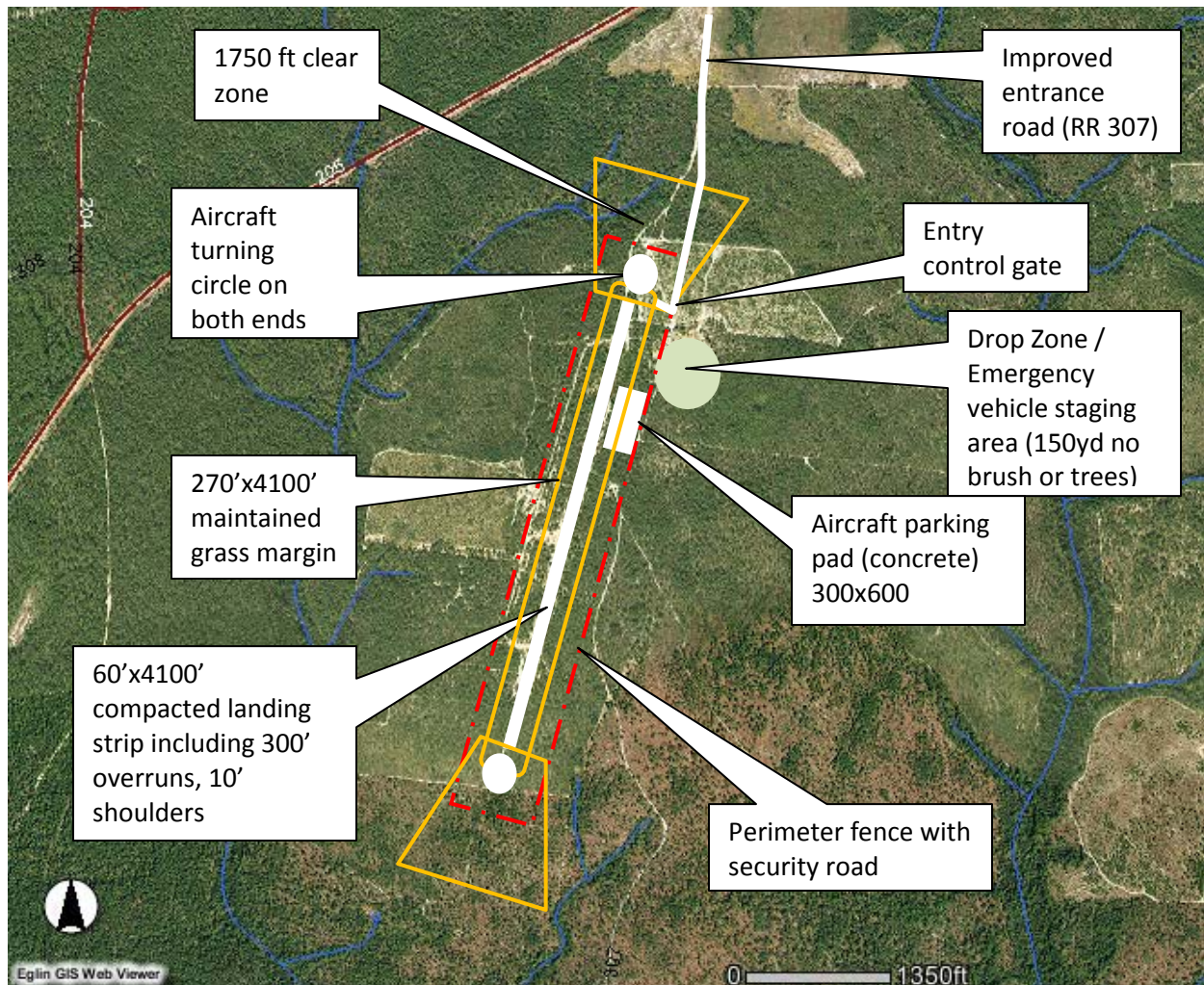


Figure 25, Rock Hill assault airstrip, roads and fencing

The Landing zone is not intended for continuous or heavy use. Other users may include Temporary Duty (TDY) encampments to support training or emergency events. In such a case the visiting agency would file the AF FORM 813 Request for Environmental Assessment and AF FORM 332 Base Civil Engineer Work Request 45 days prior, and coordinate with Range Management. The visiting agency would be responsible for restoring the site.

Rock Hill LZ is intended as a C-130 combat style assault landing/takeoff strip. Secondary users could include any aircraft capable of landing under these restrictions. F-35 aircraft in all versions would be prohibited from utilizing this strip. The F-35 and other US jet fighter aircraft are incapable of stopping without severe damage on a short unimproved surface. US jet fighter aircraft are not built to operate on dirt surfaces without sustaining severe engine damage (FOD).

The site may be required to build and maintain a stormwater detention pond. The pond area would be decided by the designers and would be a mitigation measure. The design of detention ponds is to intentionally allow for sediment from runoff to be captured (requiring periodic maintenance) and to release all water quickly enough as to not create a wetland or other habitat for birds. A French drain is commonly utilized near airfields to prevent attracting birds.

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4.4.1 Soils

Soils have varying susceptibility to erosion. Soil disturbance associated with mechanical activity may potentially result in erosion and the transport of eroded soils into nearby drainages. During rainfall events, areas characterized by impervious surfaces (i.e., areas that water cannot seep into, such as roads and paved parking areas) can facilitate water movement into stormwater drains and retention basins, where it is ultimately transported into local water bodies. The CWA prohibits the deposition of sediments into surface waters. As soil quality declines (erosion), adverse impacts to on-site and off-site environments increase. Therefore, the maintenance of soil quality is important for efficient and productive land management and utilization. Areas most prone to erosion are identified based on slope, soil type, and vegetative cover.

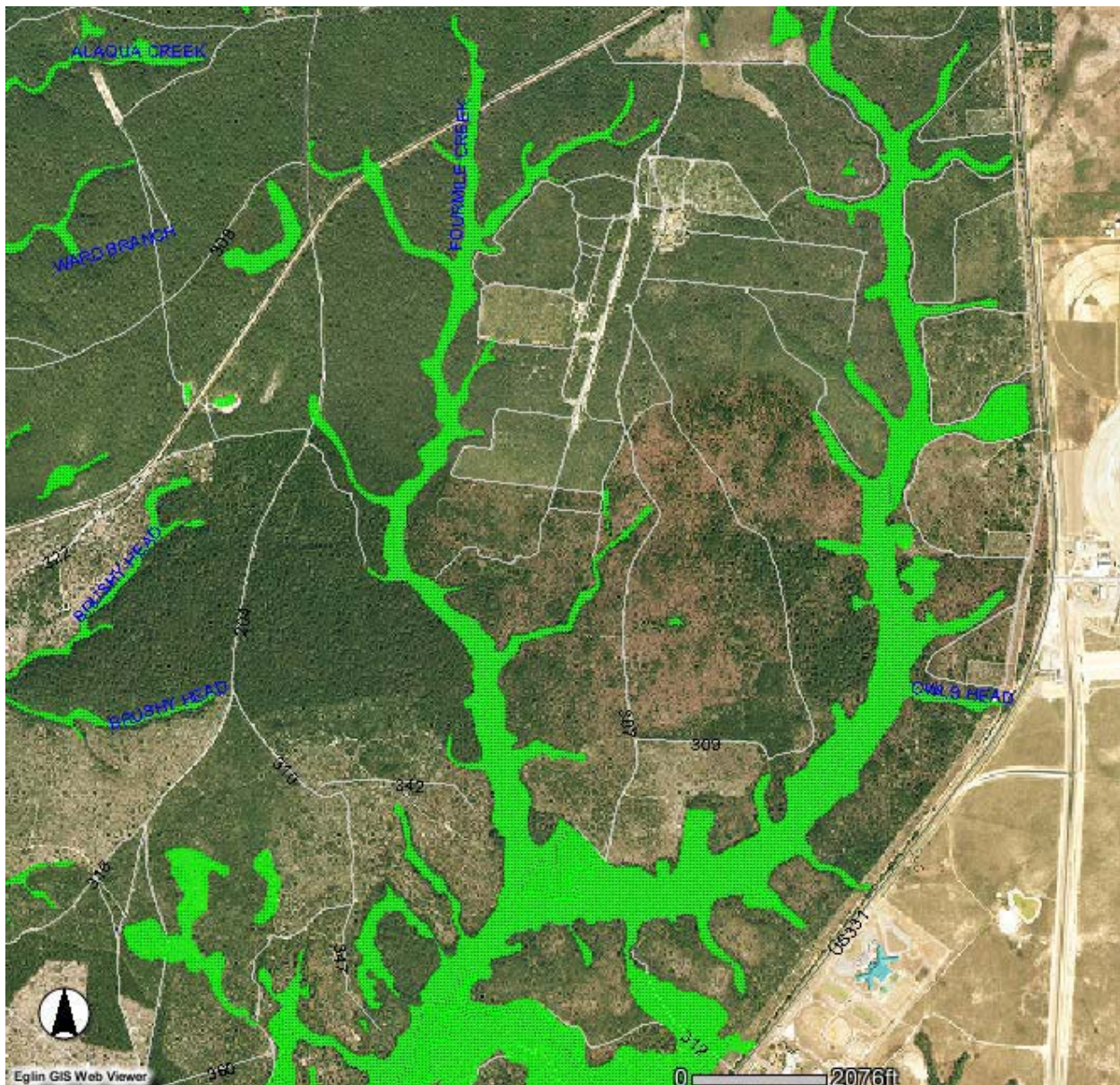


Figure 26, Wetlands surrounding Rock Hill LZ (green)

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Continued use of an unimproved (dirt/clay/sand) airfield could adversely affect soil resources. The permeable soils and relatively flat terrain at the project site minimize potential erosion. Minimal erosion would result from training activity. In the event of any soil excavations, removal of vegetation, grading, and construction activities, the potential to disturb soil stability and increase the susceptibility of soil particles to suspension and transport by wind and water would increase.

It should be noted that Rock Hill assault airstrip is greater than 1000 feet from Four-Mile Creek and its tributaries. The area is relatively flat with ravines cut sharply to the creek bed.

Vegetative management would be a key consideration in maintaining the soil cover needed to minimize erosion. Native grasses and other low vegetation should be utilized to the greatest extent possible where the forest must be cut back.

4.4.2 Water Resources

Water runoff in Four Mile Creek would not be expected to suffer degradation under normal conditions. Major fuel spills represent the greatest risk to the watershed. As fuel transfers are not anticipated at this field and transfers represent the greatest spill risk, the remaining risk would be from aircraft and ground equipment leaks. No maintenance activities or storage would occur at the site; the sources of stormwater pollution would be controlled by their absence. No aircraft wash, decontamination, or fuel storage would occur. The event of accidents or spills would be responded to immediately by emergency personnel and by Eglin chemical spill response teams as needed. Small spills would be cleaned by on-site members and reported for follow up investigation. Aircraft requiring maintenance or declaring an in-flight emergency (IFE) would be diverted to a servicing airfield, primarily Eglin/Duke/ Hurlburt or Auxiliary Field 6.

Groundwater

The potential for contaminants to be transported to groundwater as a result of inadvertent petroleum spills from refueling operations and typical aircraft operations would be the primary concern for impacts to groundwater. Rainfall could transport contaminants downward into groundwater, which then would make it possible for contaminants to enter surface waters via lateral transport. Immediate and proper clean-up of fuel spills would prevent potential impacts to groundwater. All hazardous materials and spills should be handled in accordance with Air Force regulations, as discussed in Section 4.6, Chemical Materials.

Surface Waters

For aircraft activity in close proximity to surface waters, the primary concerns for impacts to surface waters from mission activities would be erosion and migration of hazardous materials. Troop movement and aircraft landings on unpaved surfaces would have the potential to increase soil erosion. Eroded soils could enter streams, thus affecting the natural flow and increasing turbidity (temporary)—especially in conjunction with storm events. Inadvertent petroleum spills as a result of refueling operations and aircraft landings have the potential to be transported to surface waters via stormwater runoff.

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Wetlands

Primary concerns for impacts to wetlands would include driving through swampy areas, hunters and troop movement through marsh/swamp and repetitive use wetlands that could cause long-term impacts. Mission-related activities should avoid wetlands whenever possible. At times, when that is not possible, troops (and vehicle traffic) would avoid trampling wetland vegetation and the creation of “crossing” ruts that can alter hydrology. Indirectly, erosion from these sites could cause localized filling and redirect or change the flow rate. Interruption of flow is unlikely.

Some mission activities may require personnel to travel through wetland areas. The potential exists for impacts to wetland areas; routing personnel around sensitive wetland areas can minimize these impacts. No significant impact to wetland habitats is anticipated by occasional foot traffic. Under the CWA, modifications to wetlands require a Section 404 permit from the USACOE.

The Rock Hill area has locations identified as wetlands outside of the area of expected operations. Wet areas would be avoided for missions and any construction.

Floodplains

Mission activities would not directly impact floodplains; however, some indirect alteration to topography from erosion is likely. Executive Order 11988, Floodplain Management, requires examination of actions involving construction (i.e., buildings, roads) within a floodplain for the potential to impact drainage patterns within the floodplain or for the potential for people or structures to be impacted by flooding in order to minimize or prevent loss of life and property.

Conclusion

The Rock Hill assault airstrip is not itself in a floodplain; however the Four-Mile Creek around the LZ is a FEMA flood zone. Activity would not be expected to directly take place in or across the Four Mile Creek so any impacts would be indirect from erosion or incidental crossing by recreational visitors. Feral hogs are also known to cause significant damage to the vegetation in this type of drainage. Military operations in this area are kept to roads and trails. Any Ranger/Special Forces/AFSOC ground force in this area would be far from authorized “play areas” and therefore are unlikely to occur.

The area around Rock Hill assault airstrip is flat and vegetated, which limits the rate of water runoff. This is an important factor in the consideration of potential impacts. The unpaved airstrip, which would accommodate fixed-wing aircraft, would be most prone to windborne dust and sediment transport. LZs and airstrips located within close proximity to water resources should be maintained with vegetation to reduce the potential of erosion to nearby surface waters.

If mission-specific/essential operations require the use of these areas, activities should be minimized in order to reduce the potential for erosion and modification of natural water flow. The use of areas near natural drainages should be avoided when possible specifically the drainage on the North West corner of the proposed clear zone should be managed with minimal clearing activity, construction or vehicle use. It is noted that manual tree topping would be required to maintain the 35:1 clearance plane in this area. Extensive use of these areas could alter natural water flow and may require Section 404 permitting.

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4.4.3 Air Quality

The air quality analysis focused on the emissions from aircraft missions. Pollutant emissions are estimated using the three counties in which Eglin is located as the Region of Influence (ROI).

Methodology

Air emissions were estimated using a number of assumptions. Emission data were not available for all of the aircraft types listed; therefore the analysis is based on the emissions from C-130, UH-60A, CV-22, MH-53, PC-12, and UH-1 (Note the CV-22 cannot operate at Rock Hill without substantial surface improvements). The number of missions for each user group was distributed over the appropriate aircraft types. A maximum 8-hour time period was assumed per mission. It was also assumed that 80 percent (for all helicopters) and 10 percent (for C-130s) of the time the aircraft was less than 3,000 feet above ground level (AGL). This model was developed for range wide application, not Rock Hill specifically. The data is valid as it does include all expected Rock Hill operations along with operations throughout Eglin Reservation.

Conclusion

Emissions for each aircraft type are summarized in table 9 and are compared to the ROI emissions. These aircraft operations would be sporadic and occur over a large land area, thus the emissions would have little effect on regional air quality. Nitrogen oxides would have the greatest impact on the regional air quality at 0.016 percent of the ROI. These emissions are below the 10 percent threshold from the conformity rule; therefore, emissions from activities of all Eglin Range flight activity would have no adverse impacts to regional air quality.

Rock Hill specific aircraft operations data was not developed as it is a subset of the developed information already showing all range aircraft activity is below threshold.

Table 9, Aircraft Emissions

| Aircraft | Emission Factors (tons/yr) | | | |
|----------------|----------------------------|--------|--------|--------|
| | CO | NOx | PM10 | VOCs |
| C-130 | 0.13 | 0.32 | 0.13 | 0.05 |
| UH-60A | 1.33 | 0.91 | 0.25 | 1.02 |
| CV-22 | 0.35 | 1.86 | 0.24 | 0.00 |
| MH-53 | 0.24 | 0.03 | -- | 0.04 |
| PC-12 | 0.14 | 0.01 | -- | 0.12 |
| UH-1 | 1.30 | 0.49 | -- | 0.41 |
| Total | 3.49 | 3.63 | 0.62 | 1.64 |
| ROI emissions | 150,219 | 22,909 | 30,829 | 23,742 |
| Percent of ROI | 0.002% | 0.016% | 0.002% | 0.007% |

-- = no data were available

CO = Carbon Monoxide; NOx = Nitrogen Oxides; PM10 = Particulate Matter; VOC = Volatile Organic Compound; ROI = Region of Influence

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4.4.4 Noise

For low-level helicopter events, a disturbance threshold of 95 dBA is used. An Eglin Noise Study suggested this threshold for disturbance to people from low-flying aircraft (U.S. Air Force, 2005). This level of noise has also shown a wildlife response. The primary sensitive receptor to noise would be the RCWs located in cavity trees throughout the Eglin Range (none are at or near Rock Hill). Commonly, birds and wildlife respond to aircraft noise with a startle response. Rotary aircraft typically cause a greater startle response than fixed-wing aircraft (i.e. C-130). Some animals habituate, or do not respond, to particular noises as learned over time. Different species react differently to noise.

To model C-130 at Rock Hill assault airstrip, the known noise pattern from Duke Field is used as a baseline (figures 27, 28, 29). Several important notes:

the Duke Field example is based on daily use by multiple C-130s/helicopters

Rock Hill would be used infrequently

night time weighted averages are not shown

the model utilized the noisiest C-130 in the inventory

low noise J models are what would be expected at rock hill

When the Duke Field noise data is placed directly over the Rock Hill (see figure 32-34), several things become apparent:

the 65 dB noise area is completely within the Eglin range

DeFuniak Springs would experience no audible noise at all

Only the northern portion of Freeport could experience any audible noise

C-130 aircraft do not generate 95 dB noise under normal operational conditions so under all operational conditions, animals startle (and human) would not be expected even at close distances (less than 300'). Under nighttime quiet conditions, the distance and low noise would not be sufficient to be audible to individuals in-doors at nearby communities. Noise would be well below the 45 dB threshold for disturbance.

Rock Hill is surrounded by a wooded area whereas Duke Field is cleared. Forest areas would absorb sound from the aircraft ground operations, again reducing the actual sound energy. Rock Hill LZ is not expected to be used more than 6 missions a month and the weighted Duke Field noise data is based on 4-6 missions per day. 65 db is the threshold for maximum residential noise. Noise energy dissipates lineally (energy loss is directly proportional to distance). Most sound energy would be dissipated before it left the Eglin boundaries.

Conclusion

All aircraft operations generate noise. C-130 aircraft generate much less noise (85 dB) than fighters, especially the F-35 (115 dB). Noise is reduced (attenuated) by distance in roughly a linear fashion (double distance = ½ noise). Open, treeless areas transmit noise further. Trees, rough terrain, and buildings all help to absorb sound energy. The given 85 dB noise level for C-130 aircraft is for full power takeoff at 30 feet distance, an observer at the edge of the Eglin range would not hear aircraft under normal conditions. If detected, it would be a low noise for a few seconds and only under conditions of still air and no background noise.

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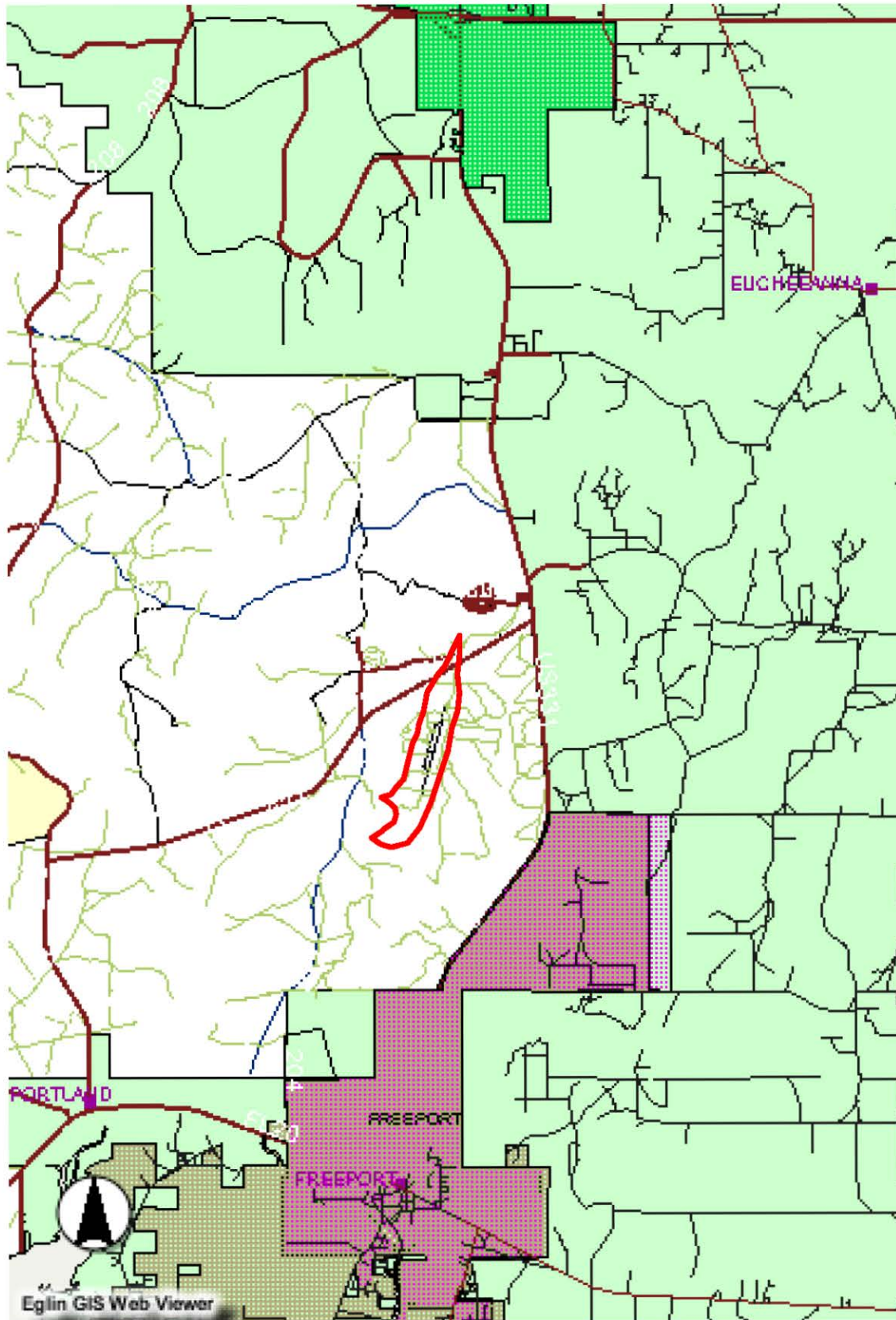


Figure 27, 65 dB footprint of Rock Hill LZ

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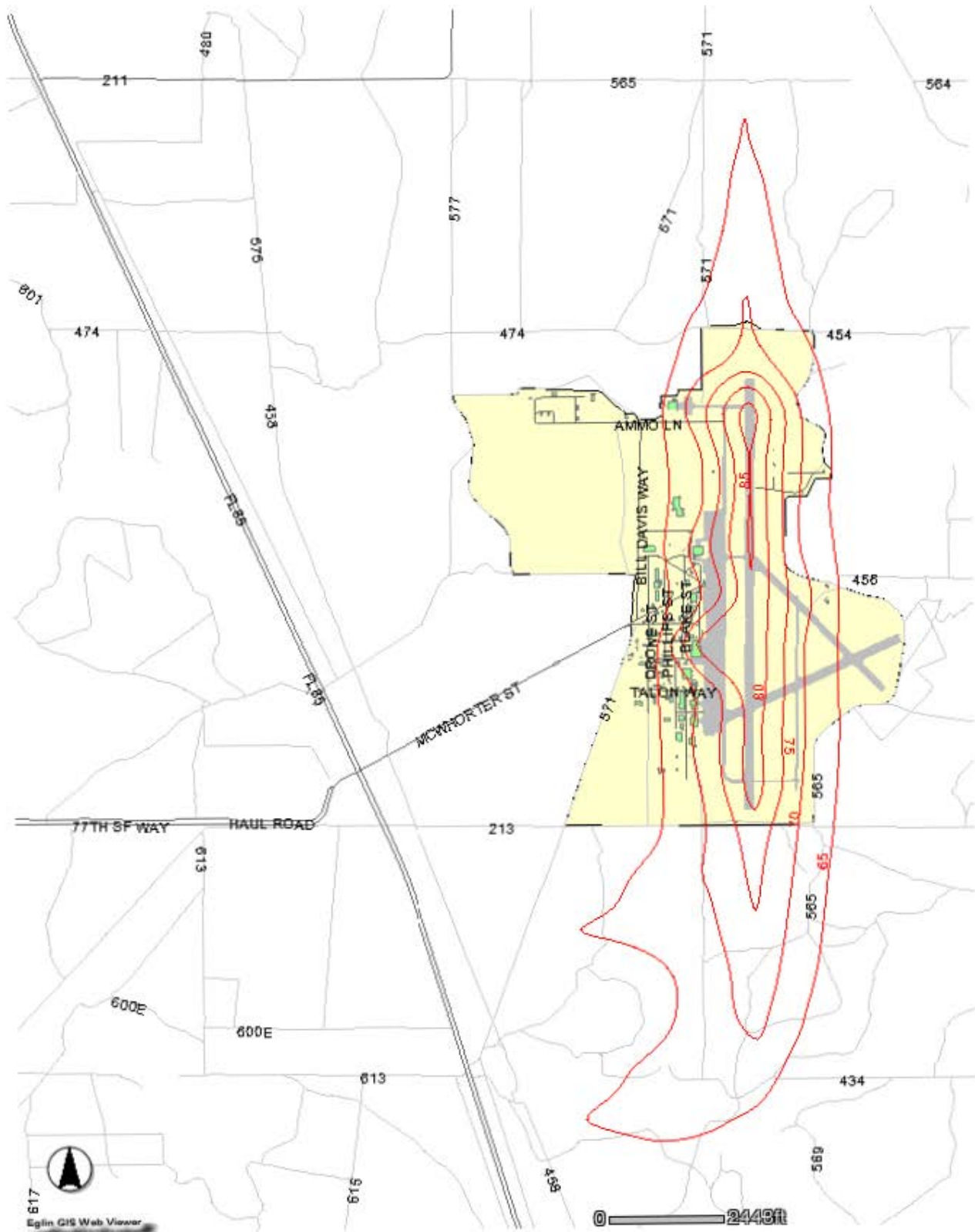


Figure 28, Duke Field C-130 noise data 2006

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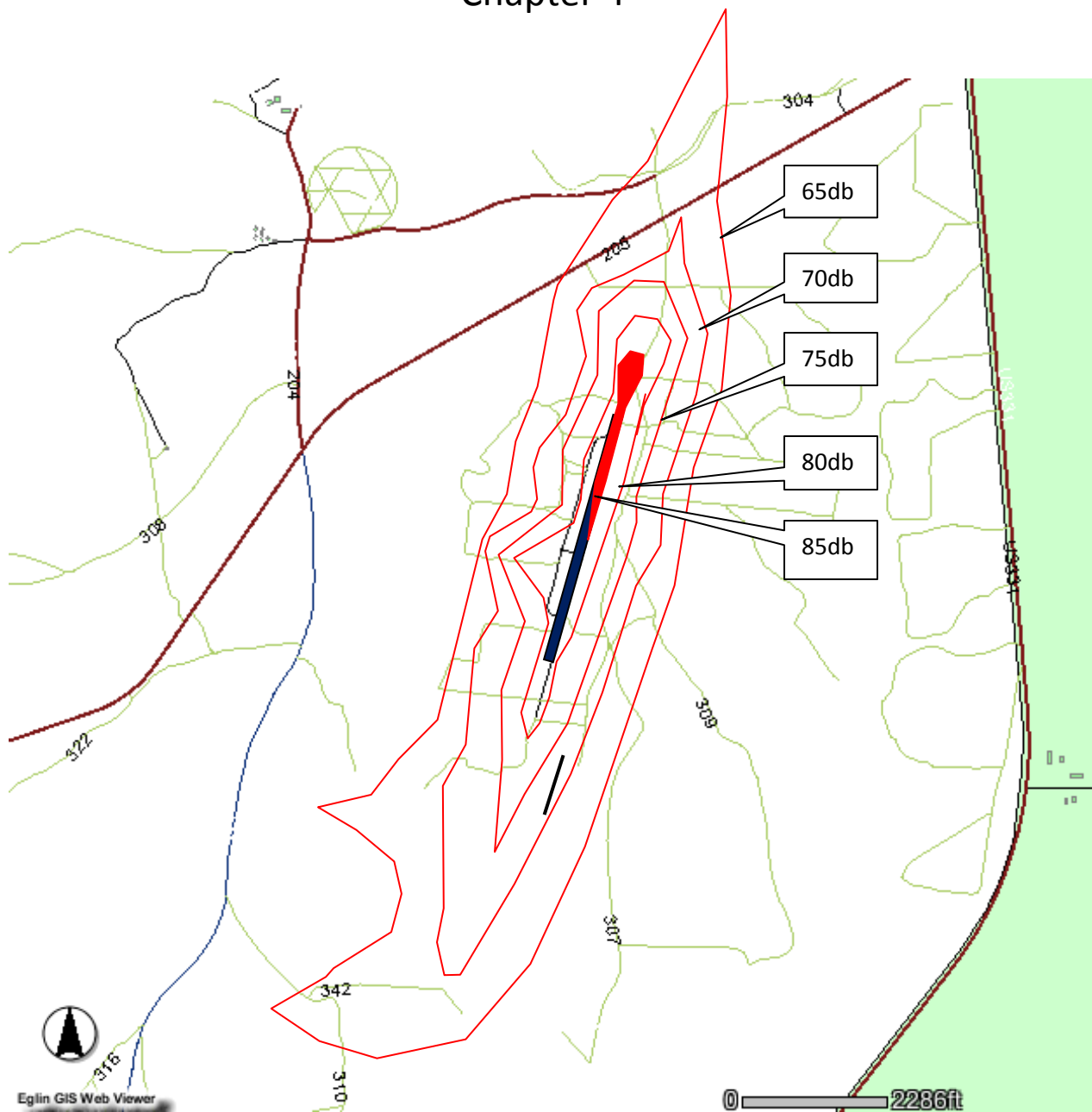


Figure 29, Rock Hill LZ noise projection based on Duke Field data

NOTE: the proposed activity level of Rock Hill LZ is 2-6 missions per month for a maximum of 48 (2 operations is one landing/takeoff with 3 practice approaches) operations.

4.4.5 Chemical Materials

Chemical materials as they pertain to the analysis in this document are components introduced into the environment from leaks, spills, or exhaust from equipment, vehicles, or aircraft. These materials may degrade the quality of air, soil, or water that are currently below federal or state standards or may be toxic to plants, wildlife, or people.

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Spills of petroleum or other chemicals would be the responsibility of the operator to contain and clean up. If spills are greater than can be handled by the operator, the fire department spill team would respond. Under all circumstances spills are to be reported and cleaned up as soon as practical.

No storage is to take place at Rock Hill, and no maintenance is anticipated other than essential emergency maintenance for flight safety. Chemicals are not anticipated to be dispersed or utilized for aircraft operations. Any exceptions would be under qualified operator control, such as the application of herbicides, pesticides or repellants.

Hazardous Materials

The storage, transport, and handling of hazardous material would be coordinated with the Eglin Environmental Management Division, Compliance Branch, Engineering Section (96 CEG/CEVCE), and these materials would be disposed of appropriately according to AAC Plan 32-5, Hazardous Waste Management Plan. Immediate response is required for petroleum, oil, and lubricant (POL) spills. Appropriate containment and cleanup actions, including on-base reporting requirements and disposal are required. POL products cannot be directed to sewer systems or pervious surfaces (such as grass).

Eglin AFB has developed emergency response procedures and site-specific contingency plans for all hazardous materials locations. Procedures and responsibilities for responding to a hazardous material spill or other incidents are described in the Hazardous Waste Management Plan (U.S. Air Force, 2006b) and the Eglin AFB SPCC Plan (U.S. Air Force, 2005b). All spills and accidental discharges of petroleum, oils, lubricants, chemicals, hazardous waste or hazardous materials, regardless of the quantity, would be reported. A Spill Discharge Report must be filled out, and the responsible party must hand-carry or fax (882-3761) this Spill Report to the Environmental Management Compliance Branch (96 CEG/CEVC) or 16 SOW CES/CEV, within 4 duty hours of the spill occurrence. Any spill that poses a threat to life, health, environment, or that has the potential to cause a fire, would be reported to 96 CEG/CEF via 96 SFS by dialing 911. If the Fire Department declares an emergency condition, they may take control of the situation, including the tasking of the organization's cleanup detail. Spills over 25 gallons are required to be reported to the FDEP (through 96 CEG/CEVC). Off-base notification of spills would be reported to the Eglin Public Affairs Office (AAC/PA) at (850) 882-3931. The proponent would comply with AAC Plan 32-9 Hazardous Materials Management.

Combustion emissions from troop transport, escort vehicles, and aircraft would be transient in nature. Exhaust emissions would not be concentrated in any one area for an extended period of time. Therefore, the concentration of hazardous chemicals would not reach levels high enough to cause adverse effects to waters, soils, wildlife, or personnel.

Debris at Rock Hill

Debris may include items from present-day missions, such as lightsticks, smoke grenade canisters, flare chutes and structures, or items left over from historical missions such as test targets and munitions. Historical documents indicate that the majority of leftover munitions are dummy or practice bombs, which are still considered UXO because they may contain a small amount of explosive known as a spotting charge.

Because many units operate under a policy of cleaning up after missions, debris that is left behind is likely done so unintentionally, accidentally, or because the item is simply irretrievable or lost. Non-

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enforcement of cleanup policies, particularly for visiting units, may account for other instances where debris is not picked up. The type of debris related to current mission activities is essentially litter; historical debris is potentially more significant.

Deposition and abandonment of debris items may potentially conflict with the Coastal Zone Management Act, the National Pollutant Discharge Elimination System, and the DoD Range Rule. Periodic policing of debris on ranges is required according to AFI 13-212. Given the cleanup policies in place and the higher percentage of recreational and public users to the military, debris from military missions constitutes a minor percentage of total debris deposited.

Natural Resources personnel have reported at least one instance of a deer fatally ingesting an illumination flare parachute; the deer was attracted to the smoke by-products (i.e., salts) coating the chute, and the chute became stuck in the animal's throat.

ERP Sites at Rock Hill

As a result of past resource and waste management practices, some areas of Eglin AFB were contaminated by various chemical compounds (U.S. Air Force, 2000b). In response, Environmental Restoration Programs (ERP) have been initiated at the base. Ongoing efforts to comply with applicable laws and regulations ensure that present resource and waste management practices are carried out in a manner that protects human health and the environment. ERP sites are identified for Eglin AFB and additional details on individual sites can be found in Eglin's Sites Status Report (U.S. Air Force, 2007).

Impacts to ERP sites are associated with the potential for ground-disturbing activities to affect the integrity of an ERP site (e.g., disturbing the soils). Additionally, users must contact 96 CEG/CEVR if personnel detect unusual soil coloration and/or odors during mission activities. Since users would avoid any ERP sites, Eglin AFB does not anticipate any significant impacts from the adjacent location of an inactive ERP site.

Conclusion

Rock Hill does not have any known ERP sites or landfills.

4.4.6 Biological Resources

This section discusses potential impacts to sensitive species and habitats that were identified, as well as those species and habitats not identified that could be expected to occur at or within a 500-foot buffer of LZs based on the presence of suitable habitat and that have the potential to be impacted by activities occurring at these locations.

Analysis focuses on assessing the potential for impacts to biological resources from the various types of LZ activities (including required maintenance), as well as on methods to reduce the potential for negative impacts to biological resources from these activities.

Of the landing zones discussed in this study, Auxiliary Field 1 and 6 have the greatest potential for noise impact on Red-Cockaded Woodpeckers (RCW). LZ East and Rock Hill LZ both have no known RCW nests or habitat. The impact of aircraft noise studied on Eglin AFB was limited to helicopter operations as the noise is sustained and of significant volume to disturb species. C-130 operations are significantly less

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noisy and shorter in duration. Helicopter operations are possible at Rock Hill LZ and allowances would be made for the possibility.

The Interstitial Area PEA (U.S. Air Force, 1998) evaluated the potential for noise impacts to RCWs from LZ operations using the MH-53 as the worst-case noise scenario. The MH-53 requires a minimum cleared area of 136 feet. The noise level of the MH-53 was characterized for receptors located at lateral distances of up to 5,000 feet from the center of the HLZ, assuming the helicopter was sitting on the ground and operating at maximum power. Noise was estimated in dBA, a metric used to account for the frequency response of the human ear for determination of the effects on the human population. The A-weighted noise level from the MH-53 helicopter landing (or taking off) from the LZs, is 95 dBA to the edge of the minimum tree clearance (136 feet), 92 dBA 200 feet away from the HLZ, and 83 dBA at a distance of 500 feet from the HLZ (U.S. Air Force, 1998). The Interstitial PEA noise analysis concluded that RCW nesting activity outside of the minimum cleared area of 136 feet, where noise levels are below 95 dB, is not expected to be significantly impacted by noise from the landing/taking off or hovering of an MH-53 Helicopter.

Impacts from low-level flight operations to RCWs were analyzed in the Eglin AFB Formal ESA Section 7 Consultation for 2005 Base Realignment and Closure (BRAC) Decisions and Related Actions (U.S. Air Force, 2008). Analysis was based on the use of such aircraft as the F-15C, C-130H, H-60, F-16C, F-18E/F, and the F-35. It was determined that low-level flights could expose RCWs to a high Sound Exposure Level (SEL) level and could have an impact to RCWs, particularly during nesting season (April to June) when birds may be flushed from their nests, possibly affecting reproductive success. However, brooding birds are less likely to respond to noise with a flight response than roosting birds, and the average time away from the nest after a noise-induced flight is usually less than five minutes (Bowles et al., 1995).

The Formal ESA Section 7 Consultation for BRAC outlined avoidance and minimization measures that would be followed to reduce the potential for noise impacts to RCWs. These included following the Management Guidelines for the Red-Cockaded Woodpecker on Army Installations which detail activities that are allowed and those that are restricted near active RCW trees (U.S. Army, 2006). Military training within 200 feet of marked cavity trees is limited to military activities of a transient nature (less than two hours occupation), and military vehicles are prohibited from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road or maintained trail or firebreak. Prohibited activities within the 200-foot buffer include bivouacking, excavating, digging, and establishing command posts.

Maintenance Activities

Overall impacts to biological resources from aircraft/HLZ/DZ operations would not be significant. Noise associated with operations may affect, but is not likely to adversely affect, the RCW. A Section 7 consultation with the USFWS would be necessary.

Maintenance activities within non-wetland HLZ/DZs may affect sensitive species and associated habitats. Maintenance activities generally include mowing, stump/debris removal, tree clearing and leveling, and erosion control and management, which may result in the destruction or degradation of suitable habitat.

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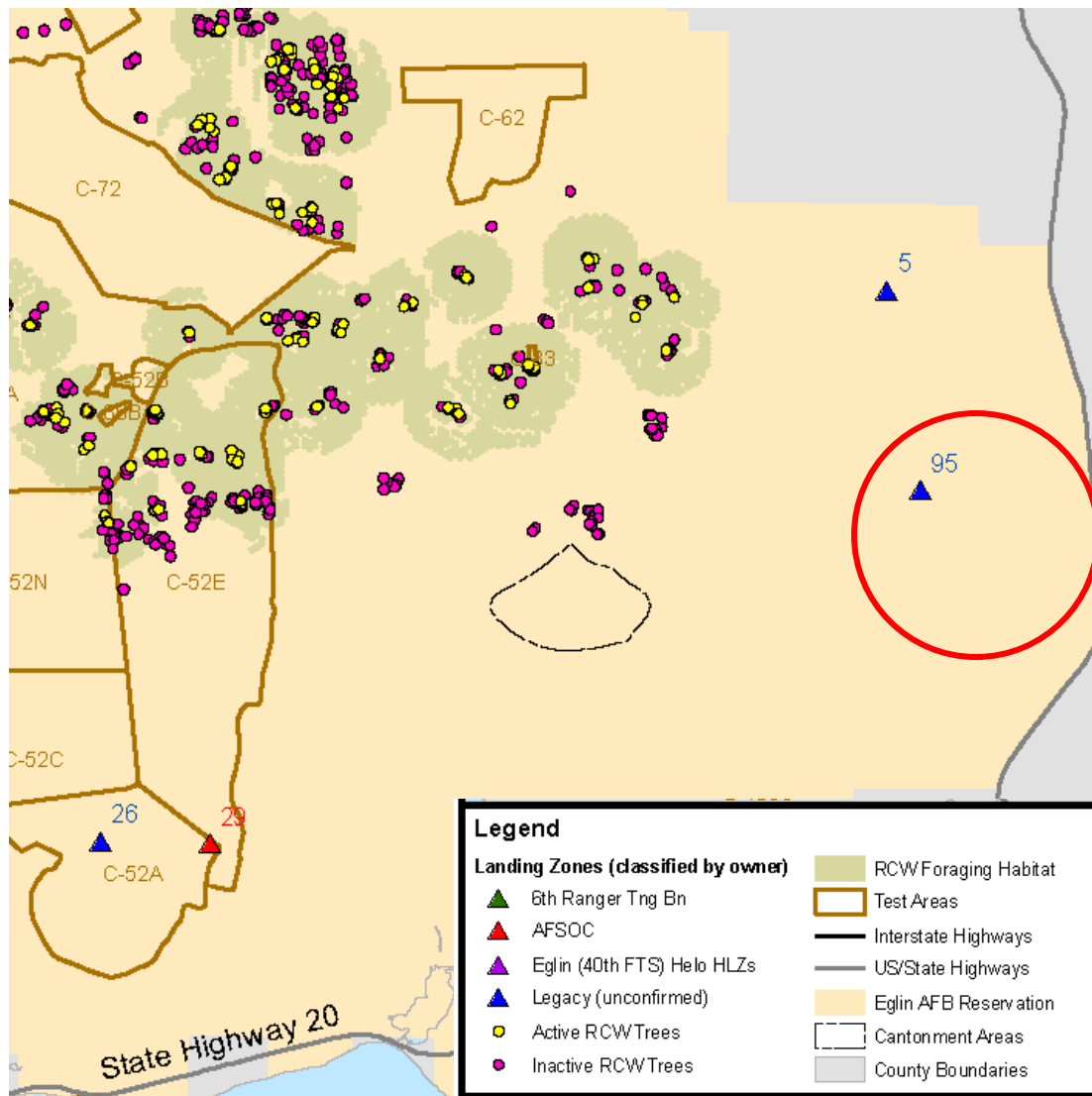


Figure 30, RCWs and foraging habitat

Red-Cockaded Woodpecker

Ground disturbance and tree-clearing from maintenance activities have the potential to impact RCW foraging habitat, as such activities reduce the overall availability of suitable habitat for the species. Ground maintenance activities may affect, but are not likely to adversely affect, RCW foraging habitat from tree clearing.

Rock Hill LZ is not in RCW habitat.

Gopher Tortoise

Maintenance activities also have the potential to impact the state-listed gopher tortoise and the federally listed eastern indigo snake. Gopher tortoise burrows serve as important habitat for many species, including the federally listed eastern indigo snake. Indigo snakes frequently utilize gopher tortoise burrows and the burrows of other species for over-wintering; however, the indigo snake could

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occur anywhere on the Eglin Range because it uses such a wide variety of habitats (U.S. Air Force, 2006). Therefore, any activities that have the potential to impact gopher tortoise burrows also have the potential to impact the eastern indigo snake. Since the eastern indigo snake is known to utilize gopher tortoise burrows, any areas that are considered to be potential gopher tortoise habitat are also considered to be potential eastern indigo snake habitat.

Impacts may occur to the gopher tortoise or eastern indigo snake due to burrow collapse or direct physical impacts from vehicles. It is possible that vehicles could crush an individual tortoise, burrow, or egg clutch during maintenance activities. Therefore, in the event that a gopher tortoise or burrow is spotted, personnel should avoid the animal and burrow. Personnel should immediately notify Eglin's NRS of the location. To minimize the potential for direct impacts, equipment operators should be instructed to cease activity if a gopher tortoise is sighted, and wait until the tortoise is out of harm's way before resuming activity. Incidental contact with personnel on foot and wheeled vehicles could also result in trampling or crushing of eastern indigo snakes, but this occurrence is unlikely, as a snake would most likely move away from the area if it sensed a general disturbance in its vicinity. Upon sighting an indigo snake, personnel should cease activities until the snake has moved away from the area.

Maintenance activities may impact the gopher tortoise and eastern indigo snake; therefore, immediately prior to any land-clearing activities, Eglin's NRS would conduct a survey of the construction areas to evaluate the presence of any gopher tortoise burrows. The Air Force would relocate gopher tortoises found to be in imminent danger from maintenance activities to another area on Eglin AFB. Transportation and release of tortoises would follow guidelines established by the FWC.

To minimize potential impacts to the eastern indigo snake from maintenance activities, all gopher tortoise burrows would be inspected by Eglin's NRS with a video camera to look for indigo snakes immediately prior to any land-disturbing activities. It is highly unlikely that an indigo snake would be found; however, if located it would be left in place unless construction is imminent. In accordance with state and federal permits, Eglin's NRS would relocate the snake.

Overall, impacts to the gopher tortoise and indigo snake would not be significant. Maintenance activities may affect, but are not likely to adversely affect, the eastern indigo snake. A Section 7 consultation with the USFWS would be necessary.

Migratory Birds

Tree clearing and land-disturbing activities have the potential to impact migratory bird habitat and have the potential to cause adverse impacts to these resources. To avoid impacts to migratory birds and their habitat, any land-clearing or other maintenance activities that have the potential to impact these resources should occur on or after September 1 through March 15, to avoid the nesting season. Furthermore, it is recommended that future NEPA documentation include detailed analysis of any activities with the potential to impact migratory birds and their habitats, including additional measures to avoid and minimize potential impacts to these resources.

Other Sensitive Species

Other sensitive species that have the potential to be impacted by maintenance activities within the interstitial area and on test areas are the Florida black bear, the Florida pine snake and the Southeastern American kestrel. However, the Florida black bear and the Florida pine snake are transient species and

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therefore, utilize a wide variety of habitats on Eglin AFB. The sudden presence of human and vehicular activity would likely startle these species, if present, and they would leave the site immediately. Southeastern American kestrels typically nest in cavities excavated by woodpeckers in snags (dead trees). Kestrels frequently locate their nests in the abandoned longleaf pine nest cavities of the RCW. Therefore, prior to the removal of any inactive RCW trees, Eglin's NRS should conduct surveys to check for occupation by the kestrel. If a nest is found, it must be left alone until the nestlings fledge unless the removal is required for training purposes. Maintenance activities must wait until the nestlings fledge.

It is anticipated that maintenance activities would not have a significant impact to the Florida black bear and the Florida pine snake. With the implementation of the above avoidance and minimization measures, it is not anticipated that maintenance activities would have a significant impact to the Southeastern American kestrel.

Sensitive Habitat

HQNCs, SBSs and ONAs are located throughout Eglin AFB. The primary potential for impacts to these sensitive habitats is from habitat alteration associated with ground maneuvers. Troop movements by foot or vehicles, the operation of heavy equipment and digging within these habitats have the potential to crush susceptible plant species. One of the management goals and objectives outlined within the Eglin AFB INRMP (U.S. Air Force, 2007b) was to identify, protect, and maintain high quality natural areas found on Eglin that are important to regional and/or global biodiversity conservation in a manner consistent with the military mission. Therefore, in accordance with these management goals and objectives which are outlined below, impacts to ONAs, SBSs, and HQNCs should be minimized. By 2008, develop general management and restoration guidelines and, when appropriate, site any community-specific guidance for the conservation of areas identified as ONAs, SBSs, HQNCs and other unique and sensitive natural communities.

Wetland/Riparian Habitat

All known locations of the Florida bog frog (Aux Field 6) are in small tributary streams of the Yellow, Shoal, and East Bay Rivers. The gopher frog requires seasonally flooded grassy ponds, depression marshes, or Sandhills upland lakes that lack fish populations, found within the sandhills ecological association, for breeding. The pine barrens tree frog is typically found in herbaceous and shrubby bogs of the Wetland/Riparian ecological association.

Eglin has both potential and confirmed habitat for the flatwoods salamander (Auxiliary Field 1 and 6, LZ East, Rock Hill). Potential habitat includes areas that meet the criteria necessary for flatwoods salamanders to survive, but have not yet had a confirmed sighting of a salamander. Confirmed habitat includes sites where salamanders have been documented. The USFWS guidelines in the Federal Register, dated 1 April 1999, establish a 450-meter (1,476-foot) buffer area from the wetland edge of confirmed breeding ponds. Within the buffer area, the guidelines restrict ground-disturbing activities in order to minimize the potential for direct physical impacts to salamanders, the introduction and spread of invasive nonnative plant species, and alterations to hydrology and water quality.

Overall impacts to biological resources from operations would not be significant. Activities may affect, but are not likely to adversely affect, the flatwoods salamander. A Section 7 consultation with the USFWS would be necessary.

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To date, no flatwoods salamander has been identified at Rock Hill.

Maintenance Activity

Of primary concern regarding impacts from maintenance activities within wetland/riparian areas is the potential for ground disturbance and sedimentation, as well as the potential to impact sensitive habitats such as HQNCs, SBSs, and ONAs. The flatwoods salamander is sensitive to activities disturbing soil and groundcover within its terrestrial habitat, especially when the disturbance creates an impediment to or alteration of the ephemeral wetlands it uses to breed (U.S. Air Force 2008). Erosion and sedimentation from maintenance activities also have the potential to impact the gopher frog, pine barrens tree frog, and Florida bog frog.

The only sites with confirmed flatwoods salamander habitat on the Eglin Range are south of the East Bay River.

Overall, impacts to biological resources from maintenance activities would not be significant. Maintenance activities may affect, but are not likely to adversely affect, the flatwoods salamander. A Section 7 consultation and coordination with Eglin's NRS would be required. Impacts to sensitive habitats would be minimized in accordance with the management goals and objectives outlined within the Eglin AFB INRMP (U.S. Air Force, 2007b).

4.4.7 Safety/Restricted Access

UXO

In accordance with Eglin AFB's current method of operation, AAC/SE would determine the risk from UXO and employ control measures based on an informal analysis of the action and the risk factors. It is possible that an Explosives Safety Submission could be required by the Department of Defense Explosives Safety Board (DDESB) prior to any construction activity. Such requirements are based on risk analysis, mission, construction activity (if any), UXO probability, DoD 6055.09 STD, et al.

96 CES/CED manages the risks (does removal) posed by UXO on the Range. Equipment such as metal detectors, robots, and protective "bomb suits" are routinely employed to find and deal with UXO. Once a potentially dangerous item is found, 96 CES/CED determines the best way to disarm it. The item may be removed to another location for disposal or it may be destroyed in place (a small amount of plastic explosive is placed next to the item and detonated from a safe distance). 96 CES/CED would then verify that no dangerous components remain on the Range.

It is not likely that UXO would affect the Rock Hill airstrip use or adversely affect the safety of personnel. However Rock Hill is listed as a "probable UXO area" requiring the area to be cleared prior to construction and care taken should an article be uncovered during construction.

Restricted Access

Access would be restricted by temporarily limiting the availability of water or land areas (e.g., roads) to the public at times when missions are in progress. The purpose of restricting access to the public during these times is to ensure their safety while maintaining mission integrity.

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On Eglin recreational lands, outdoor recreation permit holders are notified at the time of application that closures of open lands may occur as part of the normal routine. Closures of highly utilized recreational areas, such as dog hunting areas, during peak recreational public usage periods would be avoided. Because procedures are in place to restrict public access to LZs that are in use, there would be no impacts to public safety due to activities associated with the operation of Rock Hill assault airstrip.

Notices to Airmen (NOTAMs) and Notices to Mariners (NOTMARs) stating the location and duration of the proposed operations in public recreation areas, which are currently issued routinely and would continue to be required for certain missions.

As hunting is a daytime sport and the proposed use is at nighttime, there should be little or no overlap in recreational hunting and proposed Rock Hill missions.

4.4.8 Land Use

Future land use would remain consistent with current land use (predominantly military and recreation). Land uses in the interstitial area often overlap recreational use. However, military missions take first priority, and thus take precedence over other land uses such as recreation. Coordination between military activities and recreational activities occurs in advance to eliminate potential interference and impacts from multiple land usage. The Eglin Integrated Natural Resource Management Plan (U.S. Air Force, 2007b) maintains compatible use between recreation and the military mission. Therefore, no significant impacts to land use are anticipated.

4.4.9 Socioeconomics

This section discusses potential impacts that would expose low income and minority populations to disproportionate negative impacts or pose special risks to children (under 18 years old). The main concern to socioeconomics resources is the potential impacts to nearby communities and property from noise generated by Eglin. The areas of concern would be DeFuniak Springs and Freeport. As both would be under the flight path of aircraft, noise is a concern. However as discussed in the noise section, C-130 and other aircraft are frequently above these areas now and generate no noise complaints.

Environmental Justice

Noise impacts could primarily affect communities. While some temporary disturbance is possible from low-flying aircraft, the impacts are expected to be minimal and infrequent. Furthermore, the communities located nearby (DeFuniak Springs, Portland, and Freeport) encompass a population representing all levels of income and minority, as well as nonminority, families. Since all activities would involve low-level noise (45 dB or less) activities, disproportionate impacts to minorities and low-income populations would not be anticipated.

Special Risks to Children

The main issue of concern is noise that poses a special risk to children, since children are more sensitive to noise effects than the adult population. However, Rock Hill is not in the direct vicinity of schools nor is it expected to operate during school hours. Noise generated from activities including low-flying aircraft are expected to be minimal.

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4.10 Cultural Resources

A wide array of structures and archaeological features related to prehistoric occupation, pioneer settlement, and the area's previous military function as a Vietnam-era special operations training ground are known to exist in the Rock Hill area. The proposed modifications to the Rock Hill Landing Zone could potentially present an effect to the historic resources to the north, west and immediate south—as well as to the airstrip itself. Preliminary communications with the Florida State Historic Preservation Office (SHPO) suggest that the airfield itself is not eligible for the National Register of Historic Places. Efforts will be made, nonetheless, to maintain the historic integrity of this structure through preservation of its original footprint and through restoration of the same type of runway surface—compacted clay. The only fundamental changes will be installation of a concrete parking apron to one side of the landing strip. In this sense, the rehabilitation project can be considered 'adaptive reuse' of an historic structure pursuant to Executive Order 13006 and 36 CFR 67, *Historic Preservation Certifications*. Consultation on this matter with the Florida SHPO, as required by Section 106 of the National Historic Preservation Act, is underway.

The Landing Zone rehabilitation project and proposed range of activity described in this document are not expected to adversely affect the remainder of cultural resources at Rock Hill; as mission activity will be focused upon the landing strip itself, the drop zone to the immediate northeast, and the areas in immediate proximity to these structures. Abandoned target vehicles and equipment associated with earlier phases of use of the Rock Hill assault airstrip and landing zone are to be considered cultural resources contributing to an historic landscape and will be avoided in the course of the restoration work and construction of security fencing and perimeter roads. These artifacts/structures will be left in place or carefully relocated—intact—along the taxi way to the west, or out of the area to be affected by landing strip rehabilitation and mission use. Consultation with the SHPO concerning the eligibility of these resources for the National Register of Historic Places is currently underway. Likewise, vegetation clear zones associated with the landing strip will be placed so as to avoid impact to the archaeological sites in the area.

In sum, this project is not expected to adversely affect cultural resources. However, ground-disturbing activity is proposed. The historic properties registry and listing of archaeological sites at Eglin AFB are continuously being updated, and consultation with the Cultural Resources Branch (96 CEG/CEVSH) is required to obtain the latest information for any ground-disturbing activities that might impact these resources. As a result, Cultural Resources, 96 CEG/CEVSH will be duly notified of any changes in the work plan to determine potential actions required for avoidance or mitigation of cultural concerns. Specific information concerning the location of cultural resources is sensitive and users should consult 96 CEG/CEVSH on a need-to-know basis.

In the course of ground-disturbing activity, danger of direct physical impact to unknown cultural resources is always a possibility. In the event of unexpected discovery of cultural resources, such as deposits of artifacts, archaeological features, or human remains, all activity in the immediate vicinity must cease until the proponent notifies the Base Historic Preservation Officer and 96 CEG/CEVSH, and they render a determination of significance.

4.11 Irreversible and Irretrievable Commitment of Resources

The National Environmental Policy Act requires environmental analysis to identify any irreversible and irretrievable commitments of resources involved in the implementation of the Proposed Action or

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alternatives. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. *Irreversible* effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable timeframe. *Irretrievable* resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

Implementing the Proposed Action through any of the alternatives would require a commitment of natural, physical, human, and fiscal resources. In all of these categories, irreversible and irretrievable commitments of resources would occur. Land required for new construction would be irreversibly committed during the functional life of the facilities; in some cases, land uses would change from undeveloped to developed. Although it is possible for land to revert to its former state if the facilities were abandoned and destroyed, the likelihood of such an occurrence for established facilities would be low.

Considerable amounts of fossil fuels and construction materials, such as steel, cement, aggregate, and bituminous material, would be expended under the action alternatives. These physical resources should generally be in sufficient supply during the proposed project initiation, and their commitment to the project would not have an adverse effect on the resource's continued or future availability.

Some biological resources would be irreversibly and irretrievably lost with construction of the proposed project, and some areas of wildlife habitat would be lost. However, based on the size of the Eglin Complex compared with the amount of acreage that would be used for facilities, the loss would be minimal; sensitive habitat areas would be avoided to the extent practicable and impacts on sensitive species would be mitigated as discussed .

In terms of human resources, labor would be used in preparation, fabrication, and construction of the project. Labor is generally not considered to be a resource in short supply, and commitment to the project would not have an adverse effect on the continued availability of these resources. Project construction would require a substantial expenditure of funds.

The proposed commitment of natural, physical, human, and fiscal resources is based on the requirements of USAF missions. It is anticipated that businesses, employees, and residents of the local area would benefit from improved economics resulting from implementation of the Proposed Action.

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APPENDIX

Appendix A: Biological Resources

Ecological Associations

The landing zones (LZs) are located base-wide and as such, encompass all of the ecological associations that are found on Eglin AFB. These ecological associations support a variety of plants and wildlife habitat and are defined by their floral, faunal, and geophysical characteristics.

Sandhills Ecological Association

This system is the most extensive natural community type on Eglin Air Force Base (AFB), accounting for approximately 78 percent or 362,000 acres of the base. Longleaf Pine Sandhills are characterized by an open, savanna-like structure with a moderate to tall canopy of longleaf pine, a sparse midstory of oaks and other hardwoods, and a diverse groundcover composed mainly of grasses, forbs, and low stature shrubs. The structure and composition was maintained by frequent fires, (every 3–5 years), which controlled hardwood, sand pine and titi encroachment.

Longleaf Pine Sandhills consist of a high diversity of species adapted to fire and the heterogeneous conditions that fires create. Variation within the sandhills is recognized by two associations differing in the dominance of grass species (wiregrass versus bluestem). Sandhills are often associated with and grade into Scrub, Upland Pine Forest, Xeric Hammock or slope forests. Associated trees include longleaf pine turkey oak, longleaf pine-xerophytic oak, longleaf pine-deciduous oak or high pine (U.S. Air Force, 2007). The functional significance of the Sandhill ecological association is to provide maintenance of regional biodiversity. Additionally, the sandhills, due to their wide coverage on Eglin, are the ecological association across which fire carries into the other imbedded fire-dependent systems. Eglin AFB is the largest and least fragmented single longleaf pine ownership in the world, and has the best remaining old growth longleaf pine. Seepage slopes are a common embedded wetland feature found within Eglin's sandhill matrix.

Wetland/Riparian Ecological Association

Wetlands and Riparian ecological associations on Eglin AFB can be divided into the following categories: (1) wetlands, which are dominated by plants adapted to anaerobic substrate conditions imposed by saturation or inundation for more than 10 percent of the growing season; (2) lacustrine wetlands that occur in nonflowing wetlands of natural depressions; and (3) riverine communities, which are natural, flowing waters from their source to the downstream limits of tidal influence and are bounded by channel banks. The above categories are further broken down into the following natural community types, which are found within or adjacent to the action area.

Floodplain wetlands have alluvial sand or peat substrates associated with riverine natural communities and are subject to flooding but not permanent inundation.

- (1) Bottomland forest - Bottomland forest occurs on low-lying flatlands, usually bordering streams with distinct banks, where water rarely inundates the forest, such as areas along the Yellow River. On Eglin, these communities are also found on low terraces along the larger streams, such as Alaqua Creek.
- (2) Floodplain forest - This term is used to designate river bottoms and low creek bottoms. In swamps with a recent fire history, the common tree is the black titi.

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Basin wetlands are shallow, closed basin with an outlet usually only in time of high water. Bottom substrate is typically peat or sand and is usually inundated. Basin wetland vegetation is woody and/or herbaceous.

(1) Depression marsh - These systems are shallow, usually rounded depressions in sand substrate with herbaceous vegetation often in concentric bands. Peaty soil accumulates in the deepest sections where water is most permanent.

(2) River floodplain lake - Fresh water ponds support a variety of aquatic vegetation. Not all ponds on the Reservation support the same vegetation.

(3) Sandhills upland lake - Shallow, rounded depressions, sandy bottom, low nutrient.

Riparian zones may be classified into the following ravine natural community types.

(1) Alluvial stream - Clay and silt carrying, larger streams, perennial (Yellow River). Alluvial streams are characterized as perennial or intermittent seasonal watercourses originating in high uplands that are primarily composed of sandy clays and clayey-silty sands. Surface runoff generally predominates over subsurface drainage.

(2) Blackwater stream - Blackwater streams are characterized as perennial or intermittent seasonal water courses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. The dark, tea-colored water typical of blackwater streams are laden with tannins, particulates, dissolved organic matter, and iron derived from drainage through swamps and marshes.

(3) Seepage stream - Seepage streams are characterized as perennial or intermittent seasonal water courses, originating from shallow ground waters that have percolated through deep, sandy, upland soils. These streams are typically clear to lightly colored. They are relatively short, shallow, and narrow.

Table C-1 shows the type of Wetlands/Riparian ecological associations found on or adjacent to Eglin AFB.

Table C-1, Wetland Types by Wetland/Riparian Ecological Association on or Adjacent to Eglin AFB

| Type of Wetlands | Source of Hydrology | Substrate | Vegetation | Functional Significance |
|---------------------|-------------------------------|--------------|-------------------------|--|
| Depression Wetlands | Groundwater or rainwater | Peat or sand | Woody and/or herbaceous | Maintains regional biodiversity Floodwater storage Filters pollutants Maintains water quality |
| Seepage Slopes | Downslope seepage (sheetflow) | High in clay | Herbaceous | Rare habitats High biodiversity |
| Floodplain Wetlands | Rivers, streams, and creeks | Peat or sand | Woody and/or herbaceous | Maintains regional biodiversity Floodwater storage Wildlife corridors Maintains water quality |

Source: U.S. Air Force, 2007

Flatwoods Ecological Association

Pine flatwoods occur on flat, moderately well drained sandy soils with varying levels of organic matter, often underlaid by a hard pan. While the canopy consists of slash pine and longleaf pine, the understory varies greatly from shrubby to an open diverse understory of grasses and herbs. The primary environmental factors controlling vegetation type are soil moisture (soil type and depth to groundwater)

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and fire history. The average fire frequency in flatwoods is one to eight years, with nearly all of the plants and animals inhabiting this community adapted to recurrent fires. Home to numerous rare and endangered plants and animals, the Flatwoods Matrix plays a significant role in maintaining regional biodiversity, Eglin's more than 300 acres of old growth flatwoods are among the last remaining of such high quality.

Eastern Indigo Snake (*Drymarchon corais couperi*)

The federally threatened eastern indigo snake is the largest nonvenomous snake in North America and can grow up to 125 inches in length. The primary reason for its listing is population declines resulting from habitat loss and fragmentation. Movement along travel corridors between seasonal habitats also exposes the snake to danger from increased contact with humans. The snake frequents flatwoods, hammocks, stream bottoms, canebrakes, riparian thickets, and high ground with deep, well drained to excessively drained, sandy soils. Habitat preferences vary seasonally. Xeric Sandhill winter dens are used from December to April; from May to July they shift from winter dens to summer territories; from August through November they are frequently located in shady creek bottoms.

The indigo snake is strongly associated with gopher tortoise burrows. They use abandoned burrows in winter and spring for egg laying, shedding, and protection from dehydration and temperature extremes. They also use stump holes, armadillo and gopher holes, and other wildlife ground cavities.

Red-Cockaded Woodpecker (*Picoides borealis*)

The Red-cockaded woodpecker (RCW) primarily inhabits the interstitial areas of the Eglin Reservation, although RCW cavity trees can be found on some test areas as well. RCWs are not found on SRI. On Eglin AFB, the RCW typically inhabits mature, open stands of longleaf pine. The RCW does not migrate and maintains year-round territories near nesting and roosting trees. An RCW cluster typically encompasses about 10 acres, with most cavity trees within a 1,500 ft. diameter circle. The RCW has shown some preference for mature longleaf pine over other pine species as a cavity tree with the average age of longleaf pines in which new cavities have been excavated being 95 years. Currently, 110,834 acres of the interstitial area is designated as RCW foraging habitat, which equates to approximately 23 percent of Eglin AFB property.

The woodpeckers primarily feed on spiders, ants, cockroaches, centipedes, and insect eggs and larvae that are excavated from trees. Dead, dying, and lightning-damaged trees that are infested with insects are a preferred feeding source. High quality RCW forage habitat consists of open pine stands with tree diameter at breast height (dbh) averaging 9 inches or larger. The birds forage in intermediate aged (30-year old) and older pine stands, which also provide an important source of future trees for the construction of cavities. As a result of active management, RCW populations on Eglin have continued to increase. Since 1994 the entire population size has been estimated once each year. In 2007, the population consisted of 366 active clusters and 317 potential breeding groups, a 59 percent increase from in-active clusters from 1994. Figure C-1 outlines this increase in population trends on Eglin AFB.

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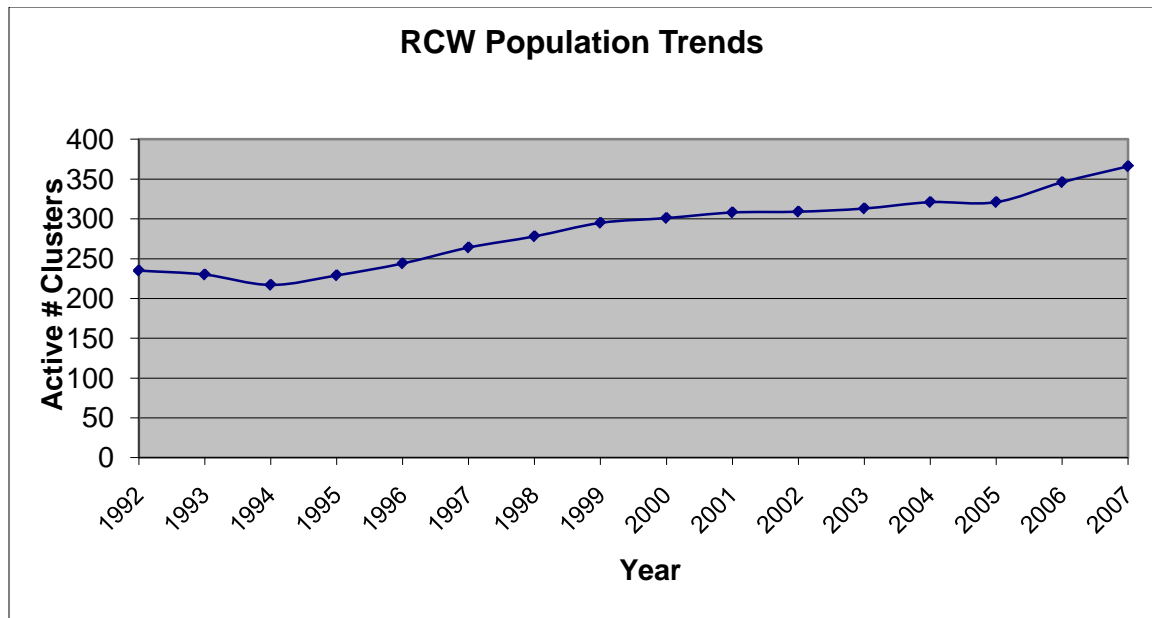


Figure C-1, RCW Population Trends from 1992-2007

Reticulated Flatwoods Salamander (*Ambystoma bishopi*)

The reticulated flatwoods salamander is a small mole salamander about 13 centimeters (cm) (approximately 5 inches) in length when fully mature (Federal Register, 1999). Habitat for the flatwoods salamander consists mainly of open, mesic (moderate moisture) woodland of longleaf/slash pine flatwoods maintained by frequent fires. Adult flatwoods salamanders breed during the rainy season, from October to December (Palis, 1997). Their breeding sites are isolated flatwoods depressions that dry completely on a cyclic basis and are generally shallow and relatively small. Since the salamander may disperse long distances to-from breeding sites to upland sites where they live as adults, desiccation (drying out) can be a limiting factor in their movements. As a result, it is important that areas connecting their wetland and terrestrial habitats are protected in order to provide cover and appropriate moisture regimes during their migration.

In 2000, the Nature Conservancy/Florida Natural Areas Inventory (FNAI), the U.S. Air Force, and the Legacy Program conducted a survey and habitat evaluation on Eglin AFB to identify the geographic extent and character of flatwoods salamander breeding sites and surrounding adult habitat. The survey concluded that depression marshes and dome swamps are strongly affiliated with the flatwoods salamander. Additionally, a 450 meter area was measured from the edge of these wetlands as an appropriate buffer to protect the majority of the salamander population. Eglin AFB supports 17,411 acres of potential and confirmed salamander habitat with the largest concentrations being south of Test Area A-78.

The reticulated flatwoods salamander (*Ambystoma bishopi*) was recently identified by the U.S. Fish and Wildlife Service (USFWS) as the species that occurs on Eglin AFB. The USFWS is currently undergoing final rule to have this species designated as federally endangered. The frosted flatwoods salamander (*Ambystoma cingulatum*) is currently listed as threatened and was the species previously thought to exist on Eglin AFB. Based on molecular and morphological analyses, Pauly et al. (2007) proposed the separation of the flatwoods salamander into two species. The division lies along the Apalachicola-Flint Rivers, with reticulated flatwoods salamanders (*Ambystoma bishopi*) inhabiting areas to the west and frosted flatwoods salamanders, (*Ambystoma cingulatum*) ranging to the east of the rivers.

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Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle (*Haliaeetus leucocephalus*) is listed as a state-threatened species and is protected by the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act. Eagles are territorial and exhibit a strong affinity for a nest site once a nest has been established. It is common for a breeding pair to rebuild damaged or lost nests in the same tree or in an adjacent tree. Individual pairs return to the same territory year after year and territories are often inherited by subsequent generations. The nesting period in the southeast United States extends from 1 October to 15 May, with most nests completed by the end of November (U.S. Air Force, 2006). Most eagles migrate north during the hot summer season. Bald eagles are known to nest at two locations at Eglin: Eglin Main Base between Cobbs Overrun and TA A-22, and near A-12 on SRI. The pair of eagles at the Eglin Main Base site has fledged one to two birds per year in most years, but in some years no young were fledged (U.S. Air Force, 2006).

Florida Perforate Lichen (*Cladonia perforate*)

The Florida perforate lichen is state and federally listed as endangered. It is endemic to Florida, occurring in three very disjunct locations (Eglin, Lake Wales Ridge, and East Coast) within the Wetland/Riparian ecological association. This lichen occurs at fewer than 30 sites throughout its range, most of which are threatened by habitat loss due to development or agricultural conversion, human disturbance, and hurricane overwash. Three of the known populations occur on Eglin AFB SRI property. The largest of the three populations persists just west of the Destin pass. In June 2000, two reintroduction populations were established in the area where populations were lost to Hurricane Opal, near Test Site A-10 on the north side of SRI. Monitoring of the lichen populations is accomplished according to the protocol set forth in the *Cladonia* monitoring plan.

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

The Gulf sturgeon is listed as threatened under the Endangered Species Act (ESA) and is considered a state-listed species of special concern. The Gulf sturgeon occurs predominately in the northeastern Gulf of Mexico, inhabiting offshore areas and inland bays during the winter months and moving into freshwater rivers during the spring to spawn. Migration into fresh water generally occurs from March to May, while migration into salt water occurs from October through November. Gulf sturgeon are present in many of the water bodies within or adjacent to Eglin including Choctawhatchee Bay, Santa Rosa Sound, Yellow River, Blackwater Bay, and East Bay.

Gulf Sturgeon Critical Habitat

The final rule for Gulf sturgeon critical habitat was published in the Federal Register on 19 March 2003. As pertains to Eglin AFB, Choctawhatchee Bay, Santa Rosa Sound, Yellow River, Blackwater Bay, and East Bay have been designated as critical habitat. The lower river provides summer resting and migration habitat, and the bays and sound contain winter feeding and migration habitat.

Gopher Tortoise (*Gopherus polyphemus*)

The gopher tortoise is a state-threatened species. The tortoise is found primarily within the sandhills and open grassland ecological associations on the Eglin Range, where it excavates a tunnel-like burrow for shelter from climatic extremes and refuge from predators. The primary features of good tortoise habitat are sandy soils, open canopy with plenty of sunlight, and abundant food plants (forbs and grasses). Prescribed fire is often employed to maintain these conditions. Nesting occurs during May through June and hatching occurs from August through September. Gopher tortoise burrows serve as

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important habitat for many species, including the federally listed eastern indigo snake (U.S. Air Force, 2006).

American Alligator (*Alligator mississippiensis*)

The American alligator is currently federally listed as threatened due to similarity of appearance to the crocodile (federally listed as endangered, does not occur on Eglin). The state of Florida considers the American Alligator a species of special concern. They typically prefer fresh and brackish water within the flatwoods, swamp, and salt marsh ecological associations. Adult alligators can reach up to 18 feet in length, although the average is 13 feet. On average, they weigh from 450 to 600 pounds (National Parks Conservation Association, 2004).

Florida Black Bear (*Ursus americanus floridanus*)

The Florida Black Bear was proposed for federal listing in 1990, however in 1998 the USFWS removed it from listing consideration. The Florida Black Bear is currently listed as a state-threatened species except in Baker and Columbia counties and Apalachicola National Forest. Black bear populations are currently found in Florida, Georgia, and a small population in Alabama. Eglin AFB is considered to be the smallest population, with an estimated 60 to 100 individuals; however, Eglin's black bear population has shown signs of increase since the early 1990s (U.S. Air Force, 2002). Eglin's NRS frequently receives reports of bear sightings and has responded to a growing number of bear/vehicle collisions and nuisance bear complaints. Most black bears on Eglin utilize the large swamps and floodplain forests in the southwest and northern portions of the Reservation. Black bear sightings have occurred in numerous locations throughout the Eglin Reservation, the majority of which have been within the interstitial areas.

Black bears eat a wide variety of food items. Their seasonal and annual diet consists primarily of fruits, acorns, beetles, and yellow jackets. Black bear in Florida breed in June–July. Implantation is delayed about four months. Gestation lasts 7-7.5 months (average 220 days) (U.S. Air Force, 2002). Females give birth every two years at most. Young are born in January–February, and stay with their mother until fall of the second year. Litter size is typically 2 to 4 cubs and females generally give birth at 3 to 4 years old (U.S. Air Force, 2002).

Southeastern American Kestrel (*Falco sparverius paulus*)

The Southeastern American kestrel is state-listed as threatened. The Kestrel is a small falcon with pointed wings, a reddish back and tail, and two black stripes on each side of the white sides of its head. Kestrels are relatively common on Eglin AFB. The clutch size is 3 to 7 (usually 4 to 5). Incubation is conducted mainly by females, and usually lasts 29 to 31 days. Young are cared for by both parents and usually leave the nest in about 29 to 31 days. Kestrels will readily re-nest if the first clutch is lost.

Gopher Frog (*Rana capito*)

The gopher frog is listed as a species of special concern by the state of Florida. These frogs are typically 2.5 to 4 inches long, excluding their legs, and have a wide body characterized by cream-colored, gray, or brown blotches (USFWS et al., 2003). Their chin and throat are spotted, and the belly is usually plain. Gopher frogs prefer habitats of the sandhills ecological association and are typically found in dry, sandy uplands. They are nocturnal and spend most of the day in tunnels or gopher tortoise burrows. Breeding occurs in ponds and other permanent water bodies. The gopher frog is found throughout Florida, with the exception of the Everglades and the Keys (USFWS et al., 2003).

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Florida Bog Frog (*Rana okaloosea*)

The Florida bog frog is listed as a species of special concern by the state. The entire global distribution of this species lies within Walton, Okaloosa, and Santa Rosa counties, most of it on Eglin property, and all known locations are in small tributary streams of the Yellow, Shoal, or East Bay Rivers. Bog frogs typically reach a maximum of 2 inches long (not including the legs) (USFWS et al., 2003). Bog frogs are primarily found in early successional shrub bog communities; in or near shallow, non-stagnant, acid (pH 4.1 to 4.5) seeps and along shallow, boggy overflows of larger seepage streams that drain extensive sandy uplands, frequently in association with sphagnum moss (U.S. Air Force, 2002). Their habitat is best maintained by burning uplands to retard the growth of hardwood forests and shrubs along streams.

Alligator Snapping Turtle (*Macrochelys temminckii*)

The alligator snapping turtle is one of the largest turtles in existence. Males typically reach up to 200 pounds with a shell length of 30 inches (USFWS et al., 2003). Alligator snapping turtles have rough brown shells and long tails similar to other snapping turtles. Preferential habitat includes rivers (particularly those with muddy bottoms), as well as water bodies and wetlands connected to rivers, such as swamps, marshes, sloughs, and lakes (USFWS et al., 2003). This species has been sighted in the brackish water within the Flatwoods and Swamps ecological associations.

Florida Pine Snake (*Pituophis melanoleucus mugitus*)

The Florida pine snake has physically adapted to digging in the loose sand and also enters rodent burrows and occasionally gopher tortoise burrows. It is currently listed as a species of special concern by the state of Florida. Adults of this species are generally between 4 and 7 feet long, with an indistinct pattern of light brown blotches with a rusty background (USFWS et al., 2003). The Florida pine snake prefers sandhills, sand pine scrub, and pastures with dry, sandy soils and open canopies. They are found throughout most of the state, however are absent from the Keys. Pine snake habitat is best managed by maintaining gopher tortoise populations and by keeping soil and ground disturbance to a minimum.

Florida Burrowing Owl (*Athene cunicularia floridana*)

The burrowing owl is a small owl, measuring approximately 9 inches in length with a wingspread reaching 22 inches (Florida Burrowing Owl Project, 2004). They are typically most active during the morning or late afternoon and can be found in open habitats with short grass and few trees. Burrowing owls exhibit strong territory fidelity. They will remain in the same territory as long as the habitat meets their biological and reproductive needs. Burrowing owls will either create burrows, similar to gopher tortoise burrows, in order to keep avian predators from swooping down on them, or they will use abandoned gopher tortoise burrows (Florida Burrowing Owl Project, 2004). The burrowing owl is currently listed as a state species of special concern and is also protected under the Migratory Bird Treaty Act. They feed on insects, frogs, carrion, and anoles. Burrowing owls have been visually documented across the Eglin Reservation, however only confirmed populations exist at Test Area B-70.

MIGRATORY BIRDS

The Migratory Bird Treaty Act (16 USC 703-712; 1997-Supp) and EO13186, Responsibilities of Federal Agencies to Protect Migratory Birds, protect migratory birds and their habitats and establish a permitting process for legal taking. A migratory bird is defined by the USFWS as any species or family of birds that lives, reproduces, or migrates within or across international borders at some point during their annual life cycle. For normal and routine operations such as installation support functions, actions of the DoD may not result in pursuit, hunting, taking, capturing, killing, possession, or transportation of any migratory bird, bird part, nest, or egg thereof, except as permitted. The DoD must address these

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routine operations through the Memorandum of Understanding (MOU) developed in accordance with EO 13186 (DoD and USFWS, 2006). Under the 2003 National Defense Authorization Act, the Armed Forces are exempted from the incidental taking of migratory birds during military readiness activities, except in cases where an activity would likely cause a significant adverse effect to the population of a migratory bird species. As detailed in the final rule in the Federal Register [50 Code of Federal Regulations (CFR) 21], in this situation the Armed Forces, in cooperation with the USFWS, must develop and implement conservation measures to mitigate or minimize the significant adverse impacts (Federal Register, 2007).

Numerous migratory bird species can be found utilizing a variety of habitats on Eglin AFB. Many of the shorebirds that are known to occur on SRI beaches are protected under the MBTA. Tables 3-11 and 3-12 identify some of the common migratory birds found on Eglin AFB and SRI, respectively. Since numerous migratory bird species can be found on Eglin AFB, this list is not exhaustive and is merely representative. It is recommended that any LZ activities that have the potential to impact migratory birds and their habitats should be included in future NEPA documentation for detailed analysis and identification of avoidance and minimization measures to reduce potential impacts to these resources.

Invasive Nonnative Plant Species

Numerous nonnative plants have been identified on Eglin AFB; however those described below have been categorized as the most problematic species impacting Eglin's ecosystems. Many of Eglin's high quality natural areas are threatened by these invasive plant species.

Chinese Tallow (*Tridica sebifera*)

The Chinese tallow, or popcorn tree, is a small-to medium-sized tree that can take over large amounts of natural habitat by forming dense stands and out-competing native vegetation. Chinese tallow is fast growing, spreads rapidly and produces copious amounts of seeds. Seeds are transported by birds or water, which makes their dispersal very difficult to control.

Cogon Grass (*Imperata cylindrica*)

Cogon grass is an upland weed, but it also occurs in places that become briefly flooded. Most documented locations of cogon grass on Eglin are linked to test sites or road maintenance activities. Because of its extreme invasiveness and its ability to rapidly cover large areas, it is considered one of the world's 10 worst weeds. Cogon grass has a fibrous root system composed of underground stems (rhizomes) that form dense mats that exclude most other vegetation. Cogon grass spreads by seeds, vegetative reproduction of rhizomes, and the movement of seeds/rhizomes by road maintenance/construction vehicles and activities.

Torpedo Grass (*Panicum repens*)

Torpedo grass is a perennial grass that frequently forms dense colonies and has long, creeping underground rhizomes. It thrives in moist, often sandy soil along beaches and dunes, margins of lagoons, marshy shorelines of lakes and ponds, drainage ditches and canals, but it also does well in heavier upland soils. Its rhizomes or runners often extend several feet out into the water, and the plant frequently forms dense floating mats. Torpedo grass can form dense stands where it rapidly out-competes surrounding native vegetation.

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Japanese Climbing Fern (*Lygodium japonicum*)

Japanese climbing fern is an invasive vine that has the ability to grow over shrubs, tree seedlings, and groundcover and kill them. Leaflets are killed back during the winter, but the rhizomes survive to the spring. This fern prefers damp areas, such as floodplains. Its spores can be transported long distances by wind and vehicles and is very difficult to control.

Chinese Privet (*Ligustrum sinense*)

Chinese privet is a semi-deciduous shrub that occurs primarily in open disturbed areas. While most often found in low, wet areas, it also may be found in upland areas. Privet often forms dense thickets that shade out native vegetation. Birds and moving water are the primary dispersal mechanism to new locations.

Invasive Nonnative Animal Species

Nonnative animal species have been found on Eglin AFB and their negative effects on rare species and sensitive habitats have been documented. Nonnative animals may prey on rare and sensitive species, disrupt the ecological function and health of ecosystems, compete with native species for resources, and mammals can carry rabies and other infectious diseases that may infect native wildlife.

The following are invasive nonnative animal species known to inhabit Eglin AFB.

Feral Hogs

The wild hog or feral pig (*Sus scrofa*) is a nonnative, invasive mammal descended from escaped domestic pigs and European wild boars, and is now common throughout Florida. Feral pigs were first brought to Florida by the Spanish explorer Hernando De Soto in 1539. Some of these pigs from early colonization attempts escaped or were introduced into the wild. By the 1950s, the original Eglin stock consisted of a mix of naturalized forest feral pigs and escaped free ranging feral pigs from early homesteads. Russian boars were introduced into the Eglin hog population in the early 1960s in an attempt to improve the hardiness of the Eglin stock. This introduction, along with hunting regulations designed to protect the wild hog population, allowed hog numbers to increase across the Eglin mainland reservation. Reports of hogs in areas where they had not been common were increasing by the 1990s. Feral hogs have not been documented on SRI.

Feral hogs are relatively large mammals that commonly reach weights in excess of 200 pounds. Plant material makes up the bulk of the hogs' diet, with mast (acorns and pine seeds) being most important in fall and winter and herbs and grasses more important in spring and summer. They can breed at an early age and have the highest reproductive rate of any large North American mammal. These hogs occur in a variety of habitats and may feed on roots and tubers during periods of wet weather or in areas near streams and underground springs. Feral hogs have been documented damaging sensitive wetland areas such as steephead ravines, seepage slopes, seepage streams, and bay galls.

Feral Cats

Feral cats (*Felis catus*) are stray domestic cats that live much like wild animals except that most tend to locate themselves near human habitation. Feral cats are not part of the natural ecosystem, and they compete with native wildlife predators for food, can carry many diseases that can be transmitted to outdoor pet cats and native wildlife, and kill large numbers of birds, small mammals, amphibians, and reptiles. Over time, and with the assistance of humans, feral cats have become established on SRI. Feral cats hunt nesting shorebirds (least tern, black skimmer, and snowy plover), Santa Rosa beach mice, and other native birds and wildlife. They have also been documented to prey on sea turtle nestlings at other

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locations. Feral cat numbers appear to be stable or decreasing on SRI due to recent feral cat control efforts, but will require continued control efforts to maintain or lower the current population. No feral cat removal efforts have been required to date on the Eglin mainland.

Coyote

The coyote has expanded its range into the southeastern United States and is considered nonnative to northwest Florida coastal areas by the USFWS and the FWC. It competes with the native gray fox and the introduced red fox and can hybridize with the red wolf now extirpated from Florida. The coyote's presence precludes future reintroduction of the endangered red wolf in these areas. Coyotes are especially problematic on SRI, where they prey on sea turtle nests, sea turtle hatchlings, and other sensitive species.

Red Fox

The red fox is an introduced species and considered by the USFWS and the FWC to be nonnative to the coastal areas of Northwest Florida. It competes with the native gray fox and other native predator species. As with the coyote, the red fox has been problematic on the barrier island where it preys on sea turtle nests, sea turtle hatchlings, and other sensitive species. No red fox removal efforts are conducted by Eglin's NRS on the mainland unless requested by the military mission for human safety or damage control.

Cactus Moth

A relatively new invasive species in the Florida panhandle, the cactus moth (*Cactoblastis cactorum*), has been found on SRI and is of concern because the late instar caterpillar feeding activities destroy native cacti and threaten the native prickly pear cacti (*Opuntia* spp.). The cactus moth is an invasive nonnative species originating from Argentina and is threatening native, horticultural, and endangered cacti in many coastal areas of Florida. The female moth lays eggs on the underside of cactus pads and, after hatching, larvae burrow into the pad and feed there as a group. This feeding activity kills the pad and eventually the host plant. After the caterpillars mature, they leave the cactus pad and spin a cocoon on the underside of another cactus pad. In 15 to 20 days, the cocoons hatch and the new moths start the cycle again.

A native cactus moth (*Melitaria predenialis*) is common in the southeast, but it does not damage native cactus like the nonnative cactus moth. The caterpillars of the native cactus moth also feed in the cactus pad but their color is a solid blue/purple and easy to distinguish from the nonnative species, which is bright orange/red with black spots.

Fire Ant

The red imported fire ant (*Solenopsis invicta*) is a serious lawn and forest pest and is found in open, disturbed areas, especially those that are wet. The red imported fire ant was introduced from South America into Mobile, Alabama, sometime around 1930, and since then it has spread across the south from the Atlantic seaboard west to California. The painful sting of the red imported fire ant makes it a serious pest and a hazard for outdoor activities.

The main areas of concern for infestations of red imported fire ants on Eglin are SRI and areas on the mainland where there are sensitive species. These areas are of most concern because the red imported fire ant is a threat to native wildlife populations, especially arthropods and reptiles, including their eggs. Fire ants can infest sea turtle nests, for instance, significantly reducing future sea turtle populations. Also, red imported fire ants have been documented in one known Eglin flatwoods salamander breeding

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pond. Other native wildlife species suffer from direct predation or competition for food by the aggressive red imported fire ant. The red imported fire ant attacks and eats anything it finds, including but not limited to snakes, lizards, ground nesting birds, and turtles and their nests. They even kill some plants.

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Appendix B: CZMA, 10 May 2010

FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT (CZMA) CONSISTENCY DETERMINATION

Introduction

This document provides the State of Florida with the U.S. Air Force's Consistency Determination under CZMA Section 307 and 15 C.F.R. Part 930 sub-part C. The information in this Consistency Determination is provided pursuant to 15 C.F.R. Section 930.39 and Section 307 of the Coastal Zone Management Act, 16 U.S.C. § 1456, as amended, and its implementing regulations at 15 C.F.R. Part 930.

This federal consistency determination addresses the proposed action for the improvement of Rock Hill Airfield on Eglin Air Force Base (AFB), Florida (Figure 1).

Proposed Federal agency action:

Rock Hill Airfield is a remote, abandoned, unpaved airfield located on the east side of Eglin AFB (Figure 2). Proposed site improvements would be limited to maintain the primitive airstrip conditions found throughout the world. The proposed action is to rebuild the pre-existing 3,500 feet (ft) cleared strip (60 ft wide) utilizing the existing footprint as much as feasible, while extending the runway to include 300 ft overruns/turning pads (4,100 ft total) (Figure 3). Necessary improvements at Rock Hill include the removal of trees and vegetation as needed to rebuild the airstrip and the minimum clear zone for C-130 transports. Two circular turning pads (150 ft) on the ends of the airstrip are desired to allow full engine power 180 degree turns. The maneuver is expected to cause ground disruption therefore some surface improvement may become necessary. The runway surface would be constructed of compacted clay with no other structural supplements or matting beyond necessary subsurface drainage, gravel and compaction. Cross runway drainage improvements (culvert or French drain) may be required to minimize runway erosion and will be included if required. Detention ponds may be required by state regulation and would be located to the west (downhill) from the field.

Federal Consistency Review

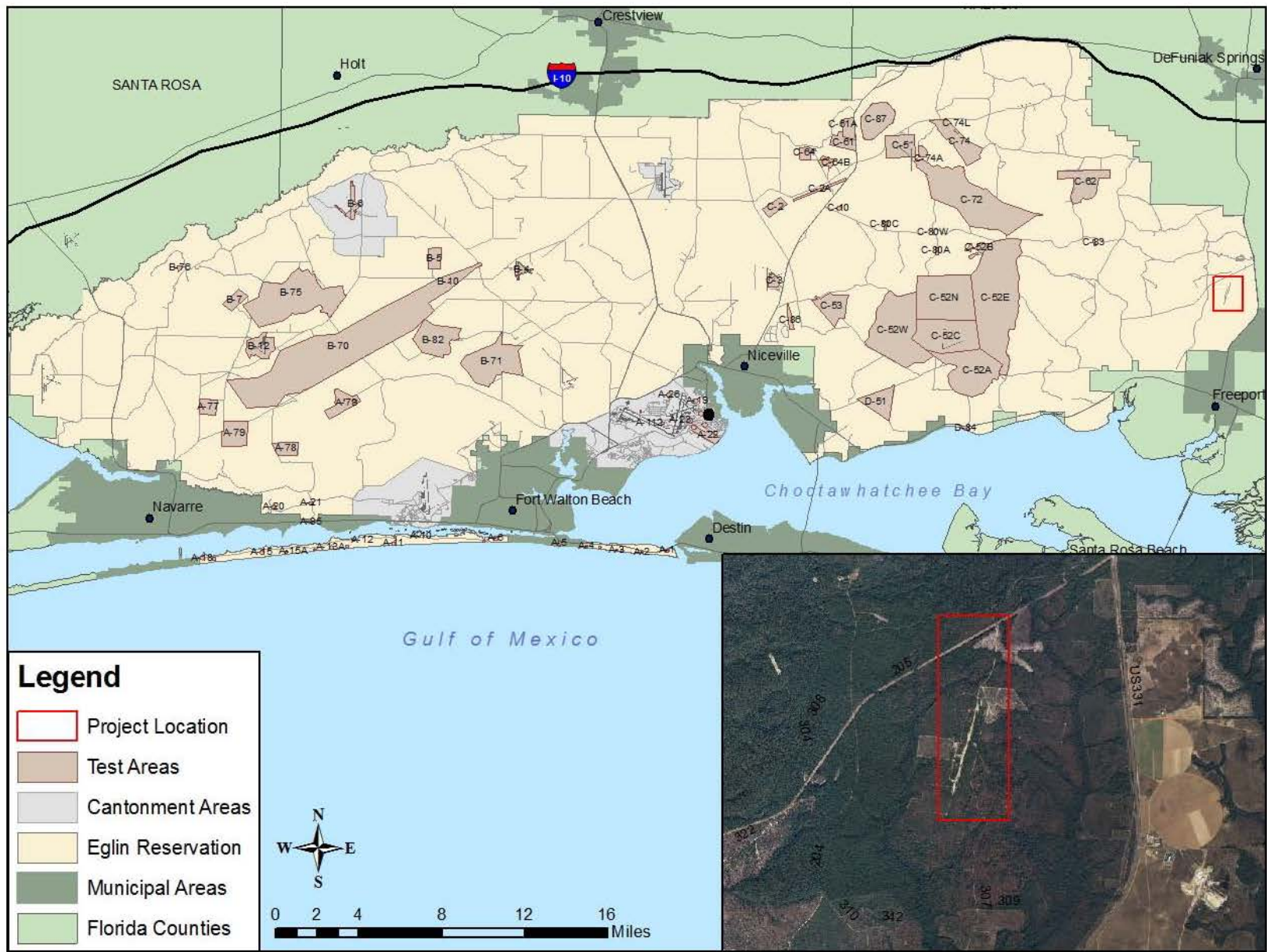
Statutes addressed as part of the Florida Coastal Zone Management Program consistency review and considered in the analysis of the proposed action are discussed in the following table.

Pursuant to 15 C.F.R. § 930.41, the Florida State Clearinghouse has 60 days from receipt of this document in which to concur with or object to this Consistency Determination, or to request an extension, in writing, under 15 C.F.R. § 930.41(b). Florida's concurrence will be presumed if Eglin AFB does not receive its response on the 60th day from receipt of this determination.



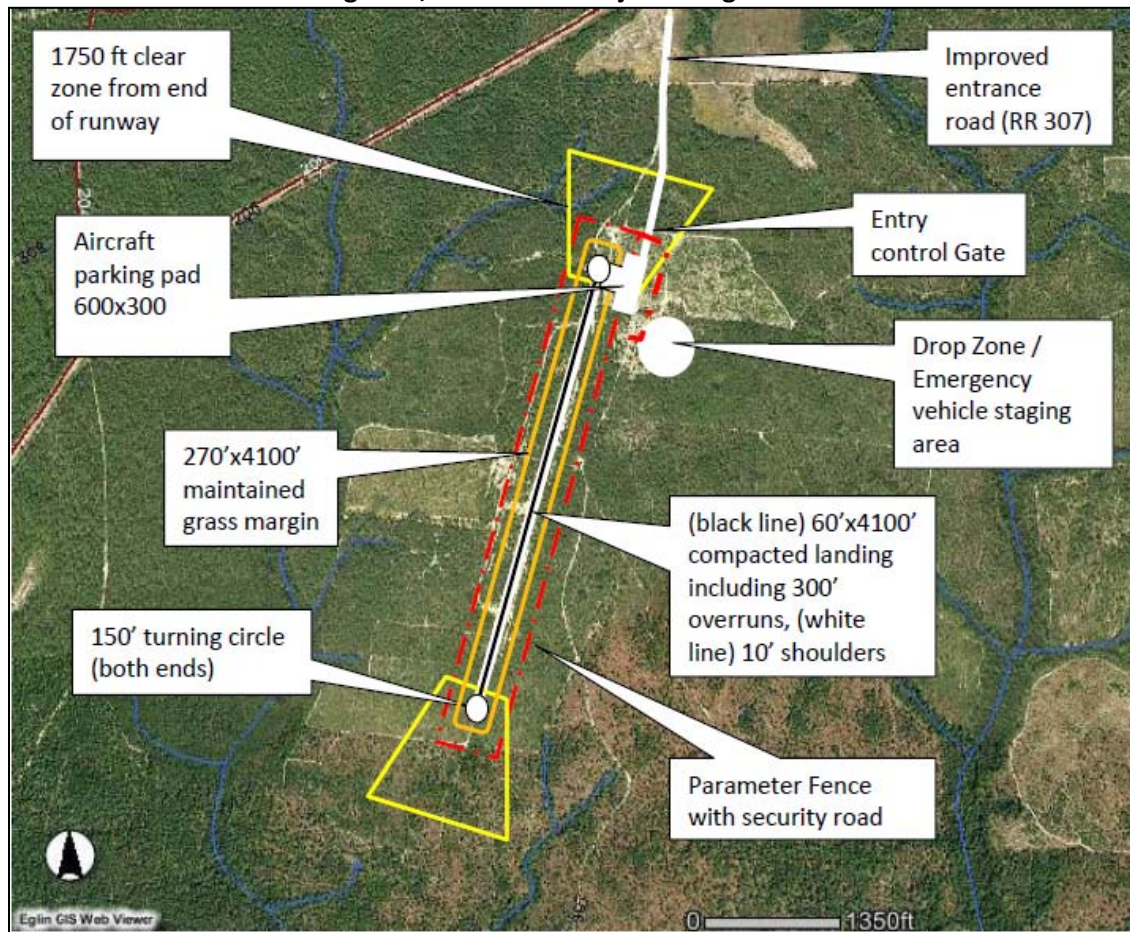
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Figure 1, Regional Location of Eglin Air Force Base, FL



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Figure 2, Location of Project on Eglin AFB



Florida Coastal Management Program Consistency Review

| Statute | Consistency | Scope |
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| Chapter 161 <i>Beach and Shore Preservation</i> | <p>The proposed action would not affect beach and shore management, specifically as it pertains to:</p> <ul style="list-style-type: none"> • The Coastal Construction Permit Program. • The Coastal Construction Control Line (CCCL) Permit Program. • The Coastal Zone Protection Program. <p>All land activities would occur on federal property.</p> | <p>Authorizes the Bureau of Beaches and Coastal Systems within DEP to regulate construction on or seaward of the states' beaches.</p> |
| Chapter 163, Part II <i>Growth Policy; County and Municipal Planning; Land Development Regulation</i> | <p>The proposed action would not affect local government comprehensive plans.</p> | <p>Requires local governments to prepare, adopt, and implement comprehensive plans that encourage the most appropriate use of land and natural resources in a manner consistent with</p> |

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| | | the public interest. |
| Chapter 186 <i>State and Regional Planning</i> | State and regional agencies will be provided the opportunity to review the Environmental Assessment. Therefore, the proposed action would be consistent with Florida's statutes and regulations regarding state plans for water use, land development or transportation. | Details state-level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation. |
| Chapter 252 <i>Emergency Management</i> | The proposed action would not affect the state's vulnerability to natural disasters. The proposed action would not affect emergency response and evacuation procedures. | Provides for planning and implementation of the state's response to, efforts to recover from, and the mitigation of natural and manmade disasters. |
| Chapter 253 <i>State Lands</i> | All activities would occur on federal property; therefore the proposed action would not affect state public lands. | Addresses the state's administration of public lands and property of this state and provides direction regarding the acquisition, disposal, and management of all state lands. |
| Chapter 258 <i>State Parks and Preserves</i> | The proposed action would not affect state parks, recreational areas and aquatic preserves. | Addresses administration and management of state parks and preserves (Chapter 258). |
| Chapter 259 <i>Land Acquisition for Conservation or Recreation</i> | The proposed action would not affect tourism and/or outdoor recreation. | Authorizes acquisition of environmentally endangered lands and outdoor recreation lands (Chapter 259). |
| Chapter 260 <i>Recreational Trails System</i> | The proposed action would not include the acquisition of land and would not affect the Greenways and Trails Program. | Authorizes acquisition of land to create a recreational trails system and to facilitate management of the system (Chapter 260). |
| Chapter 375 <i>Multipurpose Outdoor Recreation; Land Acquisition, Management, and Conservation</i> | The proposed action would not affect opportunities for recreation on state lands. | Develops comprehensive multipurpose outdoor recreation plan to document recreational supply and demand, describe current recreational opportunities, estimate need for additional recreational opportunities, and propose means to meet the identified needs (Chapter 375). |
| Chapter 267 <i>Historical Resources</i> | Consultation with the State Historic Preservation Office (SHPO) is currently underway for this project and will be completed prior to project initiation. 96 CEG/CEVH, Cultural Resources is conducting surveys to ensure mitigation of impacts to resources, and will coordinate minimization and avoidance | Addresses management and preservation of the state's archaeological and historical resources. |

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| | <p>requirements with the SHPO. Identified resources would be managed in compliance with Federal Law and Air Force regulations. Should other archaeological sites be inadvertently discovered from ground-disturbing activities, 96 CEG/CEVH, Cultural Resources, would be notified immediately and further ground-disturbing activities would cease in that area.</p> <p>Therefore, the proposed action would be consistent with Florida's statutes and regulations regarding the state's archaeological and historical resources.</p> | |
| Chapter 288 <i>Commercial Development and Capital Improvements</i> | The proposed action would not affect future business opportunities on state lands, or the promotion of tourism in the region. | Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy. |
| Chapter 334 <i>Transportation Administration</i> | <p>Minor effects are anticipated on SR 331 in regards to mission operations. If a road closure is required during a mission, the event would be coordinated through Range Operations. State Road closures would be kept to a minimum as to not cause major traffic delays or congestion.</p> <p>Therefore, the proposed action would be consistent with the State's policy concerning transportation.</p> | Addresses the state's policy concerning transportation administration (Chapter 334). |
| Chapter 339 <i>Transportation Finance and Planning</i> | The proposed action would not affect the finance and planning needs of the state's transportation system. | Addresses the finance and planning needs of the state's transportation system (Chapter 339). |
| Chapter 370 <i>Saltwater Fisheries</i> | The proposed action would not affect saltwater fisheries. | Addresses management and protection of the state's saltwater fisheries. |
| Chapter 372 <i>Wildlife</i> | <p>Airfield improvement activities may have an indirect localized effect on native terrestrial wildlife species. However, it is anticipated that these species would either move to another location or remain within the area and utilize adjacent habitat.</p> <p>Eglin AFB Natural Resources Section has made a "No Effect" determination regarding a potential flatwoods salamander pond within the project area. The pond was deemed unsuitable habitat by an endangered species biologist;</p> | Addresses the management of the wildlife resources of the state. |

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| | <p>therefore the proposed action will have no effect on the reticulated flatwoods salamander.</p> <p>Prior to project initiation a gopher tortoise survey is required. If a gopher tortoise burrow cannot be avoided, then the tortoise would be relocated in accordance with the Florida Fish and Wildlife Conservation Commission (FWC) protocols.</p> <p>Therefore, the proposed action would be consistent with the State's policies concerning the protection of wildlife and other natural resources.</p> | |
| <p>Chapter 373</p> <p><i>Water Resources</i></p> | <p>Eglin's Water Resources Section, 96 CEG/CEVCE, would coordinate all applicable permits in accordance with the Florida Administrative Code (FAC).</p> <p>An Environmental Resource Permit (ERP) from the Northwest Florida Water Management District (NFWFMD) per FAC 62-346 may be required for the proposed action.</p> <p>During Airfield improvement activities, Best Management Practices (BMPs) such as preserving vegetation for as long as possible and stabilizing disturbed areas would be applied to control erosion and stormwater runoff.</p> <p>Applicable permitting requirements would be satisfied in accordance with 62-25 of the FAC and National Pollutant Discharge Elimination System (NPDES). Eglin AFB would submit a notice of intent to use the generic permit for stormwater discharge under the NPDES program prior to project initiation according to Section 403.0885, Florida Statutes (FS). The proposed action would also require coverage under the generic permit for stormwater discharge from construction activities that disturb one or more acres of land (FAC 62-621).</p> <p>The proposed action may include the construction of a stormwater detention pond in accordance with FAC 62-25.</p> <p>Therefore, the proposed action would be consistent with Florida's statutes and</p> | <p>Addresses the state's policy concerning water resources.</p> |

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| | regulations regarding the water resources of the state. | |
| Chapter 376 <i>Pollutant Discharge Prevention and Removal</i> | <p>Any construction area larger than one acre would require a National Pollutant Discharge Elimination System (NPDES) General Permit under 40 CFR 122.26(b)(14)(x). A stormwater pollution prevention plan would also be required under the NPDES permit before beginning construction activities.</p> <p>Therefore, the proposed action would be consistent with Florida's statutes and regulations regarding the transfer, storage, or transportation of pollutants.</p> | Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges. |
| Chapter 377 <i>Energy Resources</i> | The proposed action would not affect energy resource production, including oil and gas, and/or the transportation of oil and gas. | Addresses regulation, planning, and development of oil and gas resources of the state. |
| Chapter 380 <i>Land and Water Management</i> | <p>The proposed action would occur on federally owned lands.</p> <p>The proposed action would not affect development of state lands with regional (i.e. more than one county) impacts. The proposed action would not include changes to coastal infrastructure such as capacity increases of existing coastal infrastructure, or use of state funds for infrastructure planning, designing or construction.</p> | Establishes land and water management policies to guide and coordinate local decisions relating to growth and development. |
| Chapter 381 <i>Public Health, General Provisions</i> | The proposed action would not affect the state's policy concerning the public health system. | Establishes public policy concerning the state's public health system. |
| Chapter 388 <i>Mosquito Control</i> | The proposed action would not affect mosquito control efforts. | Addresses mosquito control effort in the state. |
| Chapter 403 <i>Environmental Control</i> | <p>Eglin's Water Resources Section, 96 CEG/CEVCE, would coordinate all applicable permits in accordance with the Florida Administrative Code (FAC).</p> <p>Eglin AFB would take reasonable precautions to minimize fugitive particulate (dust) emissions during any ground disturbing/construction/renovation activities in accordance with FAC 62-296.</p> | Establishes public policy concerning environmental control in the state. |

APPENDIX

| | | |
|---|---|--|
| | Therefore, the proposed action would be consistent with Florida's statutes and regulations regarding water quality, air quality, pollution control, solid waste management, or other environmental control efforts. | |
| Chapter 582 <i>Soil and Water Conservation</i> | <p>All applicable BMPs, such as preserving vegetation for as long as possible and stabilizing disturbed areas would be applied to minimize erosion and storm water run-off, and to regulate sediment control.</p> <p>Therefore, the proposed action would be consistent with the State's policies concerning soil and water conservation efforts.</p> | Provides for the control and prevention of soil erosion. |

APPENDIX

Appendix C: Cultural Consult letter



FLORIDA DEPARTMENT OF STATE
Dawn K. Roberts
Interim Secretary of State
DIVISION OF HISTORICAL RESOURCES

Ms. Rhena L. Shreve
Cultural Resource Manager
Department of the Air Force
96 CEG/CEVSH
501 DeLeon Street, Suite 101
Eglin Air Force Base, Florida 32542-5105

September 2, 2010

RE: DHR Project File Number: 2010-3859
Proposed Restoration/Renovation to the Landing Strip at Rock Hill
Eglin Air Force Base, Walton County

Dear Ms. Shreve:

This office reviewed the referenced project for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*. The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended and 36 *CFR Part 800: Protection of Historic Properties*.

Unfortunately, we do not have enough information to make a determination on the eligibility of the *Rock Hill Airfield Resource Group* for listing in the *National Register*. Once this office receives the final Cultural Resource Assessment Survey for project area (X-1062) we will then complete our evaluation.

However, based on the information provided, it is the opinion of this office that the above-referenced undertaking will not adversely affect this or other historic properties.

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservationist, by electronic mail sedwards@dos.state.fl.us, or at 850.245.6333.

Sincerely,

Laura A. Kammerer
Deputy State Historic Preservation Officer
For Review and Compliance

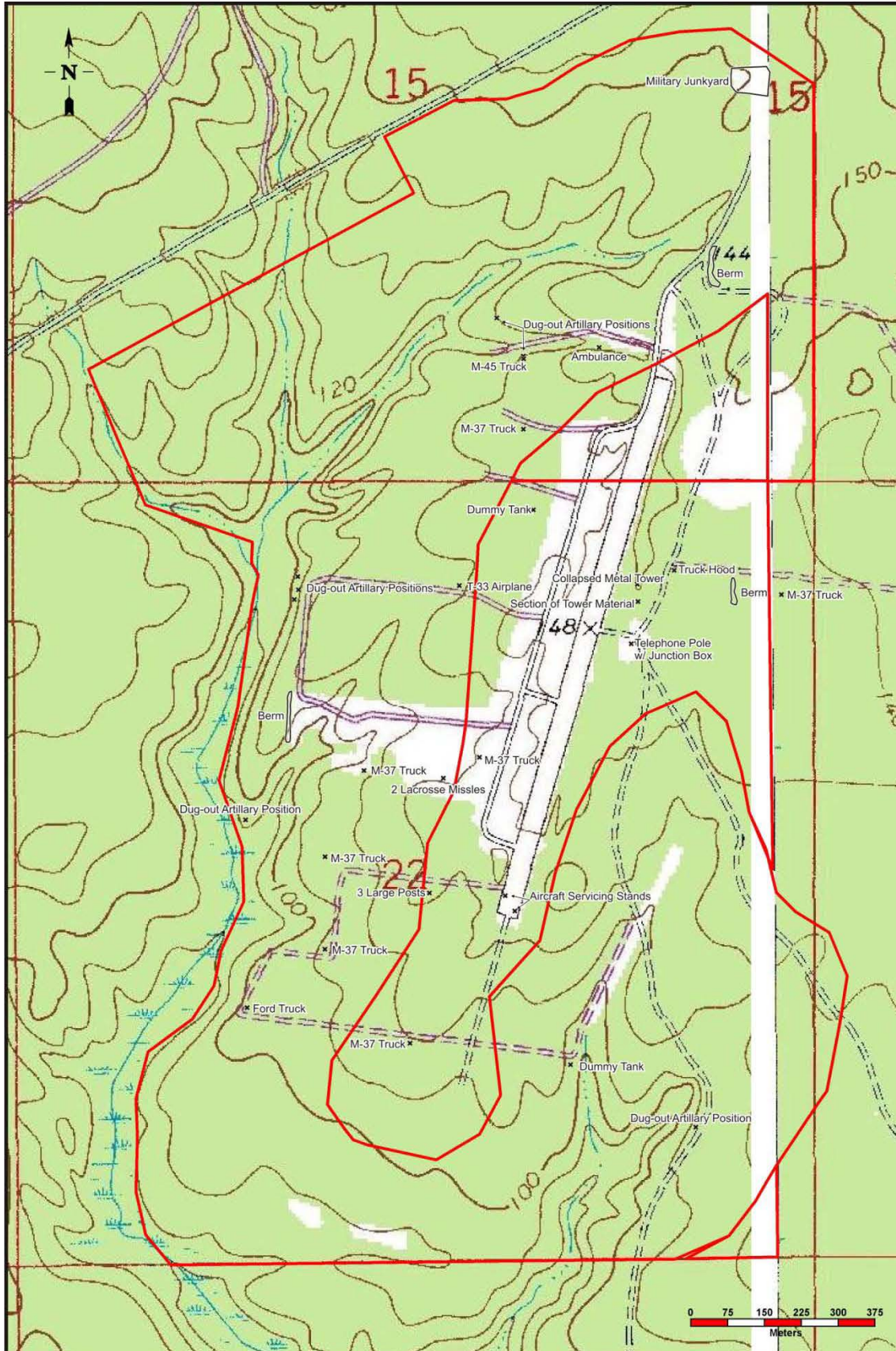
500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

☐ Director's Office
(850) 245.6300 • FAX: 245.6436

☐ Archaeological Research
(850) 245.6444 • FAX: 245.6452

☒ Historic Preservation
(850) 245.6333 • FAX: 245.6437

APPENDIX



APPENDIX

Appendix D: Biological No Effect Consult letter

1

Jago, Michael J Mr CIV USAF AFMC 96 CEG/CEVSP

From: Knight, Kelly E CTR USAF AFMC 96 CEG/CEVSNW

Sent: Tuesday, June 22, 2010 8:08 AM

To: Jago, Michael J Mr CIV USAF AFMC 96 CEG/CEVSP

Subject: RE: Wildlife

Hi Mike,

It was determined that the potential salamander pond in that area is degraded from our biologist and therefore was a "no effect". Therefore, there is no consultation necessary as far as endangered species go. Prior to construction, the proponent will need a gopher tortoise survey completed and any trees that are to be removed must go through our forestry section first.

Thanks!

Kelly Knight | SAIC

Environmental Scientist | Eglin AFB Natural Resources

107 Highway 85 North | Niceville FL 32578

phone: 850.883.5525 | fax 850.882.5321

email: kelly.knight.ctr@eglin.af.mil

-----Original Message-----

From: Jago, Michael J Mr CIV USAF AFMC 96 CEG/CEVSP

Sent: Monday, June 21, 2010 8:50 AM

To: Knight, Kelly E CTR USAF AFMC 96 CEG/CEVSNW

Subject: Wildlife

I just reviewed the Rock hill EA and I already put the CZMA in. Am I waiting for a wildlife determination? I am working on too many projects right now!

Michael J Jago

NEPA Analyst

501 DeLeon St.

Suite 101

96CEG/CEVSP

Eglin AFB, FL 32542

(850)882.1805

DSN872.1805

APPENDIX

APPENDIX E: Public Notification and Public Response

Published in NW Florida Daily News, pg A5, September 23, 2010

Public Notification

In compliance with the National Environmental Policy Act, Eglin Air Force Base announces the availability of a Draft Environmental Assessment and Finding of No Significant Impact for RCS 09-783, "Assault Airstrip EA" for public review and comment.

The Proposed Action of RCS 09-783, "Assault Airstrip EA" would be to rebuild the pre-existing 3,500 foot cleared strip at Rock Hill, just west of US 331 and south of Range Road 205 on Eglin AFB. The Preferred Alternative includes extending the runway to 3,600 foot with 300 foot overruns/turning pads. Site improvements are to be limited to maintain the primitive airstrip conditions found throughout the world. Necessary improvements at Rock Hill are to remove the overgrowth of trees and vegetation as needed to rebuild the airstrip and the minimum clear zone for C-130 transports. A turning pad on or near the North end is desired to allow full engine power (not towed) 180 degree turns. South end turning may also become necessary requiring a turnaround on both ends. Your comments on this Draft EA are requested. Letters and other written or oral comments provided may be published in the Final EA. As required by law, comments will be addressed in the Final EA and made available to the public. Any personal information provided, including private addresses, will be used only to identify your desire to make a statement during the public comment period or to compile a mailing list to fulfill requests for copies of the Final EA or associated documents. However, only the names and respective comments of respondent individuals will be disclosed: personal home addresses and phone numbers will not be published in the Final EA.

The Draft Environmental Assessment and Draft Finding of No Significant Impact are available on the web at www.eglin.af.mil/environmentalassessments.asp from Sept. 23rd until Oct. 7th, 2010. Each of the libraries in the communities surrounding Eglin AFB have computers available to the general public and librarians who can provide assistance linking to the document. Hard copies of the document may be available for a limited time by contacting: Mike Spaits, 96th Air Base Wing Environmental Public Affairs, 501 De Leon Street, Suite 101, Eglin AFB, Florida 32542-5133 or email: spaitsm@eglin.af.mil . Tel: (850) 882-2836; Fax: (850) 882-3761.

For more information or to comment on the Proposed Action, contact Mike Spaits using the contact information given above. Comments must be received by Oct. 9, 2010

Comments Received

12 October 2010, Mr Mike Spaits was interviewed on the response of the public and confirmed there was no comment whatsoever.